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LETTER OF TRANSMITTAL.

STATE DEPARTMENT, }
Lansing, Michigan, November 1, 1900. }

TO HIS EXCELLENCY, H. S. PINGREE, *Governor:*

SIR—I hereby transmit the Thirty-second Annual Registration Report of Michigan, containing statistics of births and deaths, marriages and divorces in this State during the year 1898, as required by law.

Respectfully,

JUSTUS S. STEARNS,
Secretary of State.

85596

INTRODUCTORY REMARKS.

This report, although the thirty-second annual one issued by this Department, is virtually the first of a new series and contains the first reliable mortality statistics ever collected in the State of Michigan.

Under the method formerly in use from 1867 to 1897, both inclusive, the supervisors and assessors of the State made an attempt to collect the statistics of deaths at the time of taking the annual assessment, in much the same method employed by the United States census for fifty years past. This "census method" is universally recognized as a failure for the purpose of collecting vital statistics, and the returns of births and deaths made in this manner year after year from 1867 to 1897 were grossly unreliable.

THE FIRST RELIABLE MORTALITY STATISTICS FOR MICHIGAN.

The Legislature of 1897 wisely passed an entirely new law for the "registration of deaths in Michigan and requiring certificates of death," which has been in effective operation from August 29, 1897, to the present time. This law requires that a certificate of death shall be filled out, with statement of the cause of death by the medical attendant, and presented by the undertaker to the local registrar before any disposition is made of the body. The local registrar then issues a burial or removal permit, without which a body cannot be interred, deposited in a vault or tomb, removed from the district in which the death occurred, or disposed of in any other manner.

This law may seem to be a stringent one, and it is, in so far as it prescribes a definite course of procedure which must be followed out in each case, under penalty for non-compliance, and makes it the duty of the undertaker, local registrar, prosecuting attorney and Secretary of State, each in his proper sphere, to aid in his enforcement. In practice it has worked admirably and its effective enforcement has been secured with but a trifling amount of friction. Undertakers and local registrars have co-operated to a large extent and the people of the State generally have appreciated the benefits derived from an efficient law and its thorough enforcement.

What is worth doing at all in the registration of vital statistics is worth doing well. Michigan now stands as one of the leading States of the country in this important respect, and great benefit is daily derived by her sanitary officers in their labor for the protection of the public health by the maintenance of a prompt and reliable system of recording mortality statistics.

MICHIGAN MONTHLY BULLETIN OF VITAL STATISTICS.

An essential part of the operation of the present law for the registration of deaths is the publication of a monthly bulletin of mortality, by which timely information of the prevalence of dangerous communicable diseases is given to health officers and the public generally soon after the close of each month and while it is possible to apply restrictive methods in many cases. The *Michigan Monthly Bulletin of Vital Statistics* has now been published for over three years and forms a very important part of the work of this Department. Its appearance is more prompt than that of any other State mortality bulletin in the country giving as complete details of the local occurrence of diseases, and by its aid the sanitary workers in every city, village and township of the State can maintain a strict watch on the deaths from communicable diseases in their vicinity as well as in their own districts. The reports are also useful for the State Board of Health, which has "taken such action, for the purpose of learning what was done for the restriction and prevention, and having in view the disinfection of the premises, etc., upon 1,975 deaths during the year 1898, and upon 2,293 deaths during the year 1899, first information of which was obtained by this office [State Board of Health] from the *Michigan Monthly Bulletin of Vital Statistics*. These 4,268 instances during the two years included 171 from diphtheria and croup; 40 from scarlet fever; 486 from typhoid and typho-malarial fever; 80 from measles; 246 from whooping cough; 2,756 from consumption; and 489 from meningitis of all forms."

Although the *Bulletin* is necessarily very hastily compiled, comparison of the data and especially of the mortality rates from all causes and various diseases therein presented with the more elaborate tables presented in this report will show a very close correspondence. The chief differences apparent are due to a change in the classification of causes of deaths adopted in the present report, and are readily reconcilable when the differences between the system at present in use (Bertillon classification) and the old one are taken into consideration.

REARRANGEMENT OF THE ANNUAL REPORT.

An entire alteration of the order heretofore followed in the Michigan registration report has been made for several reasons. The time-

honored plan of presenting the statistics of births first, accompanied by the explanatory text, has been departed from because the statistics of births, as now obtained under the antiquated and discredited law of 1867, last amended in 1869, are thoroughly worthless, so far as completeness is concerned, and, except for certain internal comparisons not depending upon a complete enumeration, are extremely misleading. They are therefore relegated to the last place in the report, after the more accurate statistics of deaths, marriages and divorces, and every precaution is taken to call attention to their imperfections.

The primary tables, presenting the data relative to the various classes of facts in the fullest detail, and as directly obtained from the compilation for the year, are separately grouped and are no longer combined with the descriptive text. The latter, with the secondary tables containing rates and making comparisons with previous years and with other states and countries, is separately paged and was written after the primary tables were in type. This arrangement admits of an earlier publication than when the copy was held from the printer until the entire text had been written.

DELAY CAUSED BY TARDY RETURNS OF BIRTHS.

Not only are the returns of births from the county clerks, as copied from the original reports made by the supervisors and assessors, grossly inaccurate, but they are also so tardy, even when made in strict conformity to the requirements of the law, that the appearance of this report is greatly delayed.

Deaths are registered immediately, before any disposition is made of the body. The returns are received at the State Department on the fourth day of each month for the month preceding. The compilation for the Annual Report could be very nearly complete at the end of the year.

Marriages are registered, except the mere date of marriage, before the performance of the ceremony. This is done by means of the license recorded by the county clerk. The return of the marriage must be made within ten days after the ceremony to the county clerk, and he makes a return to the State Department quarterly. The compilation of marriages could be completed within sixty days after the close of the year.

Divorces are also on the court records by means of the petitions recorded prior to action of the court, and the return of all divorces granted during the year is required to be made to the State Department during the month of January following.

But for births, on the other hand, it would seem that a systematic system of procrastination was authorized by law. And when the law is dilatory, officials acting under it may be trusted to add another meas-

ure of delay, on the principle that as the returns are tardy anyway, a little more delay will not hurt them. A birth which occurs in any calendar year is not registered during the year, nor even immediately after its close, as the act of 1867 originally contemplated, but goes unrecorded until the supervisor or assessor goes about for the purpose of making the annual assessment, which is done between the tenth day of April and the last day of May of the following year. As an extreme case, a birth which occurs in January may not be noted by the supervisor until May of the following year, or *sixteen months* after it occurred. Is it any wonder that many births are overlooked and forgotten, even when supervisors honestly try to do their duty? And when they perform it in a merely perfunctory manner, without personal house-to-house inquiry after children, the amount of imperfection must be even greater.

Probably not over two-thirds of the births that actually occur in the State each year finally get upon the records. The result is frequently personal loss to individuals and the almost complete loss of the statistical value of the collection of births.

But the births, when finally collected by the supervisor and turned over to the county clerk on or before the first day of June, have not yet reached the central statistical office. The county clerk is allowed three months for making a copy of them and a transcript of his copy, which transcript is due at the Department of State on September 1, or nine months after the close of the year recorded. Some of the births have been over nineteen months on the way. The copies of the copies of the supervisor's hearsay reports are frequently inaccurate when received, and further time is necessary in endeavoring to remove some of the most obvious blunders.

A NEW LAW NEEDED FOR THE REGISTRATION OF BIRTHS.

From the preceding statements it is very clear that an improved method of registering births in Michigan is sadly needed. The problem of the accurate registration of births is a difficult one—more so than that of registering deaths. Nevertheless, the general methods to be followed are the same, and it is believed that by employing the modern methods now in use for mortality statistics in this State, by means of the same machinery now in operation for that purpose, a fairly reliable registration of births could be obtained, including their prompt monthly or quarterly return.

A bill was introduced in the Legislature of 1899 for this purpose which possessed many commendable features. The chief opposition seemed to be along the lines of the contention that a law requiring certificates of birth invaded the privacy of the family to too great an extent, especially as the registration of illegitimate births and still-

births was required. To this argument may be opposed the fact that thousands of births of these classes have been placed on the public records of Michigan for many years under the old law, and no particular hardship or injustice has been wrought thereby. It would not seem to be a matter of greater indelicacy to record a stillborn child or an illegitimate birth immediately upon the event than to wait a year or so before making the record. In fact, the registration law for deaths does record many stillbirths, but not quite as thoroughly as a registration law for births ought to do.

OTHER LEGISLATION FOR VITAL STATISTICS.

With the exception of the obsolete law regulating the enumeration of births, the laws governing the collection of vital statistics in Michigan are in a fairly satisfactory condition and should be left practically unchanged. It is always running a considerable risk to modify a successful registration law, as a comparatively slight or seemingly unimportant change may afford a loophole through which serious loss may occur. This is especially true of the new registration law for deaths passed in 1897, whose results have been so exceptionally excellent that its operation should be allowed to continue undisturbed. It is yearly reaching a condition of greater accuracy through the gradual improvement of registration methods and the education of registrars, physicians and undertakers as to its requirements. Any amendment at the present time, especially if in the direction of greater laxity in any of the requirements of the law in regard to burial permits, would be extremely unfortunate.

The marriage license system has also given excellent satisfaction since its enactment in 1887. Any modification, which should be very carefully made in order to maintain the general features of the present system intact, will probably be in the direction of more stringent requirements in regard to the issue of the license, especially in the case of non-residents.

The law regulating the return of divorces is in advance of the laws regulating the filing of petitions and recording of divorces. The latter should be so modified that certain valuable information will be given in the petitions and provision should also be made by law for filing the final decrees in all cases adjudicated. In some counties the final decrees have not been entered by the clerks because the fees therefor were unpaid. This results in a statistical loss as well as in faulty records.

ADOPTION OF THE BERTILLON CLASSIFICATION OF CAUSES OF DEATH.

The Bertillon classification was adopted for the use of the Michigan reports on January 1, 1898, thus making this State the first in the coun-

try to accept this system which has now come so generally into use. Since its adoption by Michigan it has received the indorsement of the International Conference of State and Provincial Boards of Health of North America (Detroit, 1898), the American Public Health Association (Ottawa, 1898), the International Statistical Institute (Christiana, Norway, 1899), and the International Congress of Hygiene and Demography (Paris, 1900). Under the auspices of the latter the First International Decennial Revision was held at Paris in August, 1900, at which delegates from twenty-six different countries were present, and in the United States all of the progressive registration states and larger cities have signified their adhesion to the system. We shall thus enjoy the great advantage during future years of presenting our statistical data relative to causes of death in a form which will be definitely understood and comparable with similar statistics throughout the world. As up to the date of the general adoption of the Bertillon system, which is set for the beginning of the twentieth century, January 1, 1901, no two states in this country, hardly any two cities and no two nations (except such as had already put the Bertillon system in force), used identical classifications of causes of death, the advance which has been made in this respect is very great. A large part of the success of the movement for international agreement is due to American registrars as organized in the American Public Health Association, and in that Association Michigan has ever been active in seeking to bring about the adoption of a modern uniform classification of causes of death, the editor of this report having been chairman of the Committee on Demography and Statistics in their Sanitary Relations from the time of making the first recommendation for the general adoption of the Bertillon classification (Philadelphia, 1897), until the announcement of the successful completion of the International Revision of Paris (Indianapolis, 1900).

An exposition of the Bertillon classification in its present form, as used in this report and also in the reports for 1899 and 1900, will be found in the appendix. The practical application of the system may be examined in the tables and text relating to causes of death.

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THIRTY-SECOND ANNUAL

REGISTRATION REPORT OF MICHIGAN

CONTAINING VITAL STATISTICS FOR THE YEAR 1898

PART I.—VITAL STATISTICS AND POPULATION, 1898

This part of the report is intended to give a general idea of the results of registration during the year 1898, and to serve as an introduction to the more detailed study of the statistics in the divisions following. Advantage has been taken of the installation of a new system of registration of deaths, of which this is the first annual report, to rearrange the whole subject matter in order that it may be more convenient for reference and also that its preparation need not be delayed until the tardy returns of births (which are still collected under the old law) shall be received.

A separation of the statistical tables into two classes, (1) primary and (2) secondary, has been made. By the primary tables we understand those tables which contain the crude statistical material in detail, being the most direct results of the compilation of the returns. These tables are to be found in the following sections of the report, the pages numbered with Arabic numerals, and constitute the essential part of the same. All of the data for the current year referred to in the text, or illustrated by supplementary tables contained therein, are derived from the primary tables. The primary tables have been made as few as possible, quite a number of those formerly given each year in these reports having been discontinued. Among these are the tables showing births, deaths and marriages by color. As has been pointed out for several years past, the proportions of colors other than white contained in these tables have been so small that the results were of no practical importance. Furthermore, small as were the numbers involved, the inaccuracy of statements in regard to color on the part of the reporters was so great that very little reliance could be placed upon the results.

Somewhat similar in character are the reasons for the omission of data relative to nativity or nationality of decedents in the present report. It is easy to compile deaths as native and foreign born, and death rates may be constructed showing the comparative mortality of

the native and foreign residents of the State in proportion to population, but when we consider that all of the children of the foreign born as well as those of the natives of Michigan, help to swell the aggregate of native born inhabitants, it is plain that there can be no direct comparison between these classes. In fact, the term "foreign born" is too extensive to be valuable for purposes of definite statistical study, since many of the nationalities included differ from each other as much or more in character and mode of life as they do from the native born Americans. Hence any conclusions drawn from these statistics have been too indefinite to be of much value. On the other hand the compilation by separate nationalities is unsatisfactory because no statements of population by nationality and periods of age are obtainable. As mortality depends largely upon age incidence, this is very essential in making a satisfactory comparison, and until such data are provided by the census, it is useless to compile mortality statistics from this point of view.

Simplicity has been especially aimed at in arranging the fundamental tables, and it will be an easy matter to add to the list from year to year as demands are made for any information not at present contained in them. It is perhaps rather a more usual failing of statisticians to anticipate than to fall short of the demands of the public for statistical details, and as a table once introduced into a report may continue to be reproduced year after year solely from its inertia, no special benefit having been derived from the statistics presented, so in beginning a new series of reports it is well to be conservative in regard to the number of tables presented.

The situation is entirely different with the secondary and comparative tables introduced into the present text. These may be employed as liberally as the compiler may desire to bring out any special features of the statistics under discussion, and when their purpose is finally served, they may be replaced by other tables, designed to illustrate other features of interest. Of course there are certain tables of rates and of comparative data which will practically form a constant feature of the reports.

The order of discussion formerly employed in the Michigan Registration Reports was (1) Births, (2) Marriages and (3) Deaths. Without attempting to justify the logical order of arrangement (if there be one), both the statistics (primary tables) and text have been rearranged in the following order, solely as a matter of convenience: (1) Deaths; (2) Marriages; (3) Divorces; (4) Births. Deaths are placed first because they are of the most practical importance and interest. Marriages and divorces are naturally considered together. Births are placed last because they are collected under the old, tardy and inaccurate law of 1867, and are of very little value except for certain internal comparisons.

As the returns of deaths under the old law (1867-97) were somewhat modified during the last year of its operation by the results of the new registration law, which went into effect August 27, 1897, it has seemed better to consider the statistics of the old system as ending in 1896. Of course marriages and births are unaffected in this respect.

VITAL STATISTICS RETURNED FOR 1898.

The principal facts in regard to the returns of vital statistics for the year 1898 may be seen in the following summary:

Total number of deaths, 1898.....	29,557
Deaths per 1,000 estimated population, 1898.....	12.4
Total number of marriages, 1898.....	20,138
Persons married, 1898.....	40,276
Persons married per 1,000 estimated population, 1898.....	16.9
Total number divorces, 1898.....	1,808
Persons divorced per 1,000 estimated population, 1898.....	1.5
Total number of births, 1898.....	43,462
Births per 1,000 estimated population, 1898.....	18.2

The usual comparison of births and deaths, their difference constituting what is known as the natural increase of population, cannot be made for this year, since the improved accuracy of the returns of deaths removes them from the plane of comparison with the very imperfect returns of births. It is very doubtful if the statements of natural increase formerly made in these reports, and based on the assumption that the returns of births and deaths were approximately defective to about the same amount, were of any value whatever.

RETURNS BY MONTHS, 1898.

The distribution of the returns by months during the year 1898 may be seen in Table 1. The total number of deaths does not include the 83 deaths reported from districts remaining under the old law, since these were received after the compilation of the deaths returned under the new law. Furthermore, the distribution of deaths by months as returned under the old law is known to be incorrect, a larger proportion being returned of those which occurred during the later months of the year. This is shown in the return of births, which are still collected under the unmodified law of 1867, and which are accordingly worthless for indicating the true incidence of births during the year.

The average daily numbers of deaths, marriages and births are also given for the year and months. This average enables comparisons to be made of the rates of mortality, nuptiality and natality between the several months with as much accuracy as by the computation of rates. The imperfections of the returns of births, however, invalidate the figures in this respect. It will be noted that the month of greatest daily mortality was April and the month of least daily mortality was June. The maximum number of marriages per day was in the month of November, and the least number in July. While the highest daily number of births was in September, according to the returns, it is likely that the early months of the year are too imperfectly reported to allow this statement to be accepted as reliable. As the deaths are now much more accurately registered than the births, no inferences can be drawn as to the amount of natural increase in the several months of the year.

Table 1.—Vital statistics of Michigan, by months, 1898.

		Total number regis- tered, 1898.	Returns by months, 1898.												
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
Deaths----	{ Number	*29,474	2,385	2,336	2,757	2,751	2,545	2,119	2,262	2,510	2,685	2,489	2,258	2,377	-----
	{ Daily average..	80.8	76.9	83.4	88.9	91.7	82.1	70.6	73.0	81.0	89.5	80.3	75.3	76.7	-----
Marriages	{ Number	20,138	1,307	1,302	1,400	1,613	1,482	2,056	1,315	1,487	1,793	2,043	2,364	1,979	7
	{ Daily average..	55.2	45.1	46.5	45.2	53.8	47.8	68.5	42.4	48.0	59.8	65.9	75.5	63.8	-----
Births----	{ Number	43,462	3,043	3,173	3,856	3,534	3,724	3,554	3,612	3,894	3,807	3,801	3,492	3,920	52
	{ Daily average..	119.1	98.2	113.3	124.4	117.8	120.1	118.5	116.5	125.6	126.9	122.6	116.4	126.5	-----

* Not including 83 deaths returned by supervisors under the old law.

Before beginning the further comparative study of the returns of vital statistics for the year in connection with the results of previous years and with similar data from other states and countries, it will be necessary to refer to the methods of estimating population which are essentially necessary to the computation of proper rates for such purposes.

METHODS OF ESTIMATING POPULATION FOR THE PURPOSES OF VITAL STATISTICS.

The intimate connection between vital statistics and population renders it absolutely necessary, for the intelligent study of the births and deaths, marriages and divorces registered, that regard shall be paid to the population upon which these vital events are based. Our knowledge of the number of inhabitants of the State comes primarily from the census. As, however, census years are some distance apart, we must contrive some means of supplying the deficiency for intercensal years, or else suffer the loss of a great part of the value of our registration returns. It has been abundantly proved that to base rates upon census data only, with no allowance for increase of population after the census, is conducive to greater error, in ordinary cases, than any of the approved methods of estimating population.

There are two distinct phases involved in the ordinary estimation of populations for the uses of vital statistics, namely, (1) the estimation of intercensal populations, and (2) the estimation of postcensal populations. This may be illustrated by the population of Michigan for the past ten years. The United States census of 1890 gave the population of the State on June 1, 1890, as 2,093,889 and the State census, taken four years later, gave the population on June 1, 1894, as 2,241,641. These are the points of departure from which we endeavor to ascertain (1) what were the populations for the intercensal years 1891, 1892 and 1893; and (2) what were the populations of the postcensal years 1895, 1896, 1897, 1898, 1899 and 1900. The latter, for our present purposes, may be regarded as a postcensal year, and we are obliged to estimate its population for our present uses in the same manner as the other postcensal years. But a month or two after this is printed, the Twelfth United States Census will have made its decennial enumeration of population, and we shall have another

point of departure and a test whereby to rectify our estimates. We shall then know what method of estimation gives the best results, and by interpolating the intercensal estimates for years 1895, 1896, 1897, 1898 and 1899, we shall learn how closely they correspond to our postcensal estimates. The latter are the more difficult, while at the same time they are of the greatest practical importance. It is easy to insert terms between two fixed points as compared with projecting an estimate into the unknowable future or endeavoring to measure the conditions of present increase by the experience of the past. The latter may or may not be closely applicable, but, on the whole, it is the only guide we have, unless mere conjecture, without any attempt to secure solid foundations of fact, may be entitled to consideration.

There are three principal methods of estimating population for intercensal years or postcensal years, viz., (1) by arithmetical increase; (2) by geometrical increase; (3) by natural increase. The last method may be combined with either of the others. It is applicable when accurate registration of births and deaths enables the natural increase of the population to be known, with approximate accuracy, for each year, and when the disturbing influence of migration can also be definitely known. This is the ideal method, although practically applicable in few instances owing to defective vital statistics and lack of records of arrivals and departures. In New Zealand, where these data can be definitely known, the estimated populations are carried forward in the annual year-books for the purposes of vital statistics with great accuracy. Not only the total population is estimated, but also the males and females, as based on the excess of male and female births over deaths, and excess of arrivals of males and females by sea over departures, and the estimates are also carried forward by quarters, thus affording a reliable basis for the most recent computations of rates. Thus in the New Zealand Official Year-Book for 1899 we find the following table, which is given in full as an illustration of a desirable method of estimating population:

Year.	Estimated population on the 31st December.	Increase during the year.			Centesimal increase on population of previous year.
		By excess of births over deaths.	By excess of arrivals over departures.	Net increase.	
1892.....	650,433	11,417	4,958	16,375	2.58
1893.....	672,265	11,420	10,412	21,832	3.26
1894.....	686,128	11,610	2,253	13,863	2.06
1895.....	*668,706	11,683	896	12,578	1.83
1896.....	714,162	12,180	1,472	*13,652	1.95
1897.....	729,066	12,142	2,752	14,894	2.09
1898.....	743,463	11,711	2,696	14,407	1.98

* The results of the census taken in April, 1896, disclosed the fact that the estimate of population for December, 1895, was too low by 1,804 persons. Adding this number to the increase for 1896 (13,652 persons) makes 15,456, which is the difference between the populations given for the years 1895 and 1896.

What is especially noteworthy is the fact that the census taken after a five-year period proved the estimate of population to be wide of the exact truth by only 1,804 persons in a population of about 700,000. Another feature of interest is the very irregular fluctuation in the per-

centage of annual increase, due chiefly to the changes in the balance of migration. The natural increase, taken alone, also fails to present that regular growth which would be theoretically predicted, and which some have attempted to impose as a practical rule for estimating population in all cases, calling it the "standard method," however inapplicable to particular cases. Following is a comparison of the several methods of estimating population as applied to Michigan for the six years since the State census of 1894:

Table 2.—*Intercensal and postcensal estimates of population of Michigan.*

		United States Census, 1890, 2,093,889.		
		(1) By arithmetical increase.	(2) By geometrical increase.	(3) By arithmetical and natural increase.
Intercensal years.....	1891.....	2,130,827	2,129,900	2,133,981
	1892.....	2,167,765	2,166,500	2,170,216
	1893.....	2,204,703	2,203,800	2,206,488
		Michigan State Census, 1894, 2,241,641.		
Postcensal years.....	1895.....	2,278,579	2,280,300	2,274,792
	1896.....	2,315,517	2,319,400	2,309,148
	1897.....	2,352,455	2,359,300	2,345,025
	1898.....	2,389,393	2,399,800	2,380,902
	1899.....	2,426,331	2,441,100	2,416,779
	1900.....	2,463,269	2,493,100	2,452,656
		United States Census, 1900,		

The first method, that of taking the populations of successive years in arithmetical series, and hence called the "arithmetical method," is by far the simplest of any system of estimation, and as we shall see later on, corresponds more closely to the observed conditions of growth of population in this State than the geometrical method. We find the total amount of increase between two successive censuses, divide this by the number of intercensal years, and add this average annual increase as the increase for each successive year of the intercensal or postcensal periods. Thus Michigan increased in population from 2,093,889 persons in 1890 to 2,241,641 persons in 1894, or a net gain of 147,752 persons in the four years. This was an average gain of 36,938 persons per year, and adding this number to the original population of 1890, we obtain the population of 1891, and so on for the intercensal and postcensal years. According to this method, the population of the State for the year 1898 is 2,389,393, and this number is that employed throughout this Report as a basis for the estimation of rates. The predicted population for 1900 is 2,463,269, and according to the correspondence of this number with the figures to be obtained by the United States census of that year, we shall have to apply a certain factor of correction of greater or less magnitude.

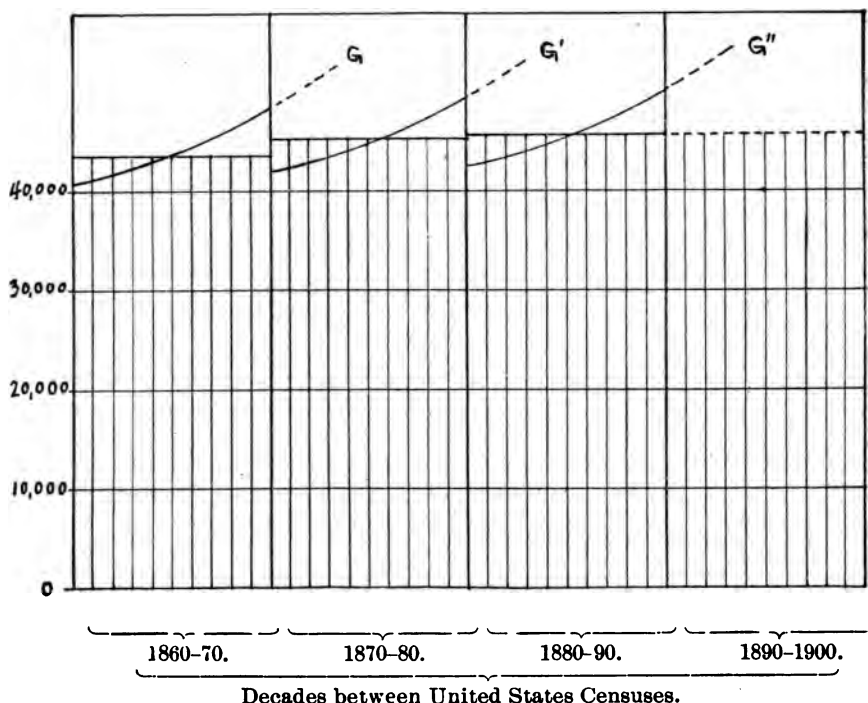
The second method presented is that of geometrical increase. The populations for successive years are assumed to be in geometrical series, and from certain theoretical considerations and the early application of this method by Dr. Farr to the population of England, to which it is reasonably well adapted, it has obtained great prestige as an accepted method. Starting with the enumerated number of inhabitants in the State for the year 1890, we find that the increase to the census of 1894, or 147,752 persons, corresponds to a growth of 7.06 per cent in the four-year period. By extracting the fourth root of this, we find that the annual rate of growth which, compounded yearly, would produce the same amount of increase at the end of four years, is 1.72 per cent. We continue to apply this rate of annual increase to each year since the census, finding that the number for the year 1898 would be 2,399,800 and for the year 1900 would be 2,483,100. As this method is directly at variance with the observed law of growth in this State, as is shown in Diagram II, it is not employed practically in this report, but the rates calculated upon the basis of the arithmetical method may readily be converted into rates based upon either of the other methods represented if desired.

The third method, which is given merely as a matter of interest from its possible importance at some future time when our statistics of births shall be improved, is similar to that employed in the Swedish mortality statistics. We find the natural increase of each year, i. e., the excess of births over deaths, and adding the same together for the intercensal years, find out how much the population by census exceeds that obtained from the natural increase. The difference is the increment due to balance of migration (or to inaccuracy in the records of births or deaths), and this may now be distributed among the different years by the usual arithmetical method. The geometrical method is not applicable in this case, as the natural increase, which lies at the foundation of its use, has here been eliminated. As the censuses were taken as of date June 1, we find the total excess of births over deaths as returned from June, 1890, to May, 1894, both inclusive, was 106,842 persons. The State increased in population 147,752 in that time, leaving a remainder of 40,910 due to immigration. One-fourth of this number, added to the addition by natural increase for each year gives the series of estimated populations by the third method. It has been necessary to supply the natural increase for the years since 1897 by taking an average of the six years preceding, since the new registration law for deaths went into effect in 1897 and the natural increase of births over deaths can no longer be used, owing to the greatly increased accuracy of the registration of deaths. Under the old law, the error was probably to some extent in the other direction, as births appeared to be collected with greater accuracy than were deaths. This would lead to an over-statement of natural increase. This error was exaggerated during the first years of the decade by gross frauds in Detroit in regard to the making of fictitious returns, chiefly of births, so that the value of the figures involving natural increase, as derived from the old registration law of Michigan, is very conjectural. Hence the simple plan of an arithmetical estimate seemed preferable to the mixed system of natural increase and arithmetical distribution of the remainder.

SUPERIORITY OF THE ARITHMETICAL METHOD OVER THE GEOMETRICAL
METHOD FOR ESTIMATING THE POPULATION OF MICHIGAN.

The superiority and greater applicability of the arithmetical method to the estimation of the population of Michigan for intercensal and postcensal years have been referred to so frequently in the Registration Reports of this State for some years past, and so clearly illustrated, that any detailed comparison would hardly seem to be necessary. But it must be admitted that a prejudice yet exists in the minds of many statisticians in favor of what is dubbed the "Standard Method," and that without the slightest regard to the observed conditions of growth of the population which it is proposed to estimate, they will consider any other method than the geometrical one "unfortunate" or "irregular," and question to some extent the rates derived from its use. Hence it is necessary to repeat the statement of the reasons for employing the arithmetical method of estimating population in these reports from year to year, and it is especially important upon beginning what is virtually a new series of Registration Reports, containing the first reliable statistics of mortality for this State, that the basis for computing the rates used shall be firmly established.

DIAGRAM II.—INCREMENTS OF POPULATION IN MICHIGAN BY ARITHMETICAL
AND GEOMETRICAL METHODS OF ESTIMATION.



The principle authorizing its employment is very simple, being only that the law of increase for individual years must conform to the law of increase of successive intercensal periods. The geometrical method

assumes that the same rate of increase will hold good for postcensal years as obtained for the intercensal years next preceding. Now if this be true, the increment of population for the last year of an intercensal period must be greater than the increment of the first year of that period, being founded upon a larger supporting population; and the increase for any intercensal period as a whole must be greater than that for the preceding one, otherwise the assumed law of geometrical progression utterly fails. We can illustrate this failure of the geometrical method by the diagram, which for simplicity is based only upon the United States censuses.

The aggregate amount of increase of population of Michigan between each of the last four United States censuses is represented by the three parallelograms corresponding to the intercensal periods, and bounded above by the horizontal lines, whose prolongation from one intercensal period to another (not shown except for the decade 1890-1900) would represent the estimate of population by the arithmetical method or that of the average annual increase. Dividing each of these parallelograms into ten equal parts, we have the assumed increment of population for each intercensal year, whose continuance for the years since the last census constitutes the postcensal estimate indicated by the dotted line. It should be noted that the entire diagram refers to increments of population, and not to the populations as affected by those increments.

Now, say the adherents of the geometrical method of estimation, as for example Dr. Newsholme, in the latest edition of his valuable work on Vital Statistics, p. 5: "This method (that of arithmetical series) is most fallacious, as it makes no allowance for the increased number of parents year by year, owing to steadily increasing numbers who year by year attain marriageable age. It assumes, in other words, simple interest when compound interest is really in action."

Without disputing the fact that population tends to increase in geometrical ratio when not disturbed by migration, nor retarded by a decreasing birth rate (the latter a factor which is beginning to be seriously felt even in England), it may be asserted that this assumption of the growth of the population of Michigan (and of many other States of this country) is entirely contrary to the observed facts as recorded by the successive censuses. Thus in the diagram above, the decennial increments of population for three successive intercensal periods are nearly equal. The exact figures are as follows:

Population of Michigan, 1860.....	749,113	{	.....Gain of population, 1860-70, 434,946, or 58.06 per cent.
Population of Michigan, 1870.....	1,184,069		.....Gain of population, 1870-80, 452,878, or 38.25 per cent.
Population of Michigan, 1880.....	1,636,937		.....Gain of population, 1880-90, 456,962, or 27.92 per cent.
Population of Michigan, 1890.....	2,093,889		

Thus we see that the net gain during intercensal periods was in no sense proportioned to the number at the beginning of the period. The population gained during the decade of 1880-90 exceeded by less than 25,000 the population gained from 1860 to 1870, although the State began the latter decade with over double the population of the former one. The rapid decrease of the decennial percentages of increase from 58.06 per

cent to 27.92 per cent in thirty years would suggest the absurdity of the assumption that the annual rate of increase of one census period may be continued, as a basis for statistical computations, to the next. In the diagram, the curved lines G, G', G'', represent the upper boundaries of annual increments obtained by the geometrical method as contrasted with the horizontal arithmetical estimates. Should we follow this method, the curves for a succeeding intercensal period would cut high above the average determined by census, as they should to correspond with an increased gain of population with increasing population, which the geometrical method assumes as a fundamental postulate, but which the census fails to confirm. Thus we would have to keep coming back to a greatly reduced estimate of population after each census, with the result that artificial curves would be found in the rates based upon the geometrical method and due entirely to its lack of correspondence with observed facts.

What is true of Michigan is true of many other States of the Union, and even some of the oldest-settled States, like Massachusetts, are found to show less correspondence with the geometrical than with the arithmetical method of estimation. When the disturbing influence of immigration shall have entirely ceased, and the present decreasing birth rate of the country shall have reached its limit, there may come a time when the geometrical method will be generally applicable. But for the present it would involve a mathematical absurdity and entire disregard of the indications of the various censuses to employ it.

COMPARISON OF 1898 WITH PREVIOUS YEARS OF REGISTRATION.

The vital statistics for the year 1898 may be compared with the returns for the preceding years of registration by means of Table 3. In this table estimated populations are presented for the intercensal and post-censal years, by whose aid the death rates, marriage rates and birth rates may be computed for each year, and thus fairly accurate comparisons be made of the data with allowance for the increase of population of the State.

It will be noted that the number of marriages for the year 1898 is the largest ever recorded in Michigan. This number, 20,138, corresponds to a rate of 16.9 persons married per 1,000 estimated population, or as is sometimes given instead, 8.5 *marriages* per 1,000 population. It is the customary and perhaps preferable practice to state marriage rates in terms of the persons affected, thus doubling the number of marriages before dividing by the population in computing the rate. Strictly, however, the comparison should be made with the number of marriageable persons in the State instead of with the total population, as will be further explained in the portion of this Report devoted to the special subject.

While the number of marriages exceeded all previous records, the marriage rate was very moderate. It was greater than those for the immediately preceding years, 1894, 1895, 1896 and 1897, but was less than the rates of any of the other years since the marriage license law went into effect (1887). Indeed, while it is not certain that the records of marriages before 1887 are quite as accurate as after that date, the marriage rates of the early years are generally higher than that for 1898.

The severe financial depression of 1893-97 is indicated by the very *low marriage rates* of those years, these rates, as is well known to

statistical students, being regarded as a very sensitive "barometer of prosperity." The year 1898 presents the first symptoms of recovery from this condition, and the still low rate may be expected to show a continuous increase for several years to come.

The returns of births likewise show some correspondence with the returns of marriages. While it is true that the returns of births are very imperfect, and for certain comparisons, as that of the distribution by the months of the year, are quite worthless, yet as the returns are presumably collected in the same manner and with about the same degree of carelessness in each year, the results of successive years should be fairly comparable. Thus we note that the number of births for the year 1898, 43,462, was the smallest recorded in Michigan since 1886, as might have been expected after several years of very low marriage rates. Making allowance for increased population of the State, the birth rate is even more remarkably low, being, in fact, absolutely the lowest on record. Thus the marriage rate for 1897 (15.8) and the birth rate for the following year (18.2) are the lowest of any years of registration, and it is probable, from the increased marriage rate in 1898 that the period of greatest depression in these rates has been reached and passed in this State for some time.

With the year 1898 an entirely new era is reached in Michigan as far as it relates to the registration of deaths. Beginning on August 29, 1897, the body of no deceased person can be interred or removed from the place where death occurred until a certificate of death has been filed with the local registrar and his permit issued. This requirement of the issue of a permit in advance of any disposition of the body is absolutely essential for correct mortality statistics, and the results of previous years' collections of deaths in Michigan cannot, of course, be compared with the more accurate returns obtained under the present law.

The fact that the number of deaths registered for the year 1898 largely exceeds the number enumerated (not registered) for any preceding year does not have any bearing upon the relative healthfulness of the years. It is probable that there was no increase in the actual number of deaths in the State as compared with the years immediately preceding but that nearly ten thousand deaths were registered in 1898 which would have been omitted entirely had the supervisors attempted to collect them as formerly. Hence comparisons of deaths and death rates with the preceding years of registration cannot be made, and the results of registration for 1898 form the first of a new series of mortality statistics which will be immensely more valuable than the old one.

For the same reason that comparisons of the accurate returns of deaths for 1898 cannot be advantageously made with the grossly unreliable returns for preceding years, so the natural increase for the year is left undetermined. While the births and deaths were inaccurately collected under the old law, but with approximately the same amount of error, the difference between the number of births returned in a year and the number of deaths reported would give, approximately, the increase of the State due to the growth of its own population. But when the returns of deaths are largely increased with the greater accuracy of registration, it is evident that the apparent natural increase would be too low, the old system of returning births remaining intact. This loss may form one of the reasons why it is now desirable that the method of registering births in this State shall now be improved so that the standard of efficiency *shall compare* with that obtained in other classes of returns.

Table 3.—Marriages, births and deaths registered in Michigan, for the years 1867-98, with rates per 1,000 population. (Stillbirths included in both births and deaths.)

Years.	Population.	Registration returns, 1867-98.				Rates per 1,000 population.			
		Number of marriages.	Number of births.	Number of deaths.	Excess of births over deaths.	Persons married.	Births.	Deaths.	Excess of births over deaths.
1867*.....	993,902	4,312	14,000	4,400	9,591	-----	-----	-----	-----
1868.....	1,057,288	8,697	25,020	8,235	16,785	16.5	23.7	7.8	15.9
1869.....	1,120,673	8,459	27,093	9,145	17,948	15.1	24.2	8.2	16.0
1870†.....	1,184,059	9,791	26,663	10,766	15,897	16.5	22.5	9.1	13.4
1871.....	1,221,552	10,605	25,992	9,728	16,264	17.4	21.3	8.0	13.3
1872.....	1,259,045	10,752	27,993	13,371	14,622	17.1	22.2	10.6	11.6
1873.....	1,296,538	11,897	34,606	14,258	20,350	18.4	26.7	11.0	15.7
1874†.....	1,334,031	12,255	31,151	12,500	18,651	18.4	23.4	9.4	14.0
1875.....	1,384,515	11,851	31,958	11,990	19,968	17.1	23.1	8.7	14.4
1876.....	1,435,000	11,913	34,235	12,576	21,659	16.6	23.9	8.8	15.1
1877.....	1,485,484	11,899	33,395	12,919	20,476	16.0	22.5	8.7	13.8
1878.....	1,535,968	12,880	35,162	12,766	22,396	16.8	22.9	8.3	14.6
1879.....	1,586,453	13,892	34,122	14,407	19,715	17.5	21.5	9.1	12.4
1880†.....	1,636,937	14,935	35,323	16,102	19,221	18.2	21.6	9.8	11.7
1881.....	1,691,117	15,894	34,749	19,238	15,511	18.8	20.5	11.4	9.2
1882.....	1,745,298	16,830	37,026	16,425	20,601	19.3	21.2	9.4	11.8
1883.....	1,799,478	17,174	40,809	16,906	23,903	19.1	22.7	9.4	13.3
1884†.....	1,853,658	15,989	40,408	18,056	22,352	17.3	21.8	9.7	12.1
1885.....	1,893,697	15,885	42,119	16,646	25,473	16.8	22.2	8.8	13.5
1886.....	1,933,735	16,665	41,095	18,137	22,958	17.2	21.3	9.4	11.8
1887.....	1,973,774	17,179	46,226	19,482	26,744	17.4	23.4	9.9	13.5
1888.....	2,013,812	17,297	48,952	21,764	27,188	17.2	24.3	10.8	13.5
1889.....	2,053,851	18,317	49,272	20,315	28,957	17.8	24.0	9.9	14.1
1890†.....	2,093,889	18,664	52,306	21,642	30,664	17.8	25.0	10.3	14.6
1891.....	2,130,827	19,244	50,812	22,079	28,733	18.1	23.8	10.4	13.5
1892.....	2,167,765	20,107	46,221	21,729	24,492	18.6	21.3	10.0	11.3
1893.....	2,204,703	19,197	47,722	21,982	25,740	17.4	21.6	10.0	11.7
1894†.....	2,241,641	18,220	44,596	20,959	23,637	16.3	19.9	9.3	10.5
1895.....	2,278,579	18,952	46,273	22,757	23,516	16.6	20.3	10.0	10.3
1896.....	2,315,517	18,897	46,302	21,963	24,339	16.8	20.0	9.5	10.5
1897.....	2,352,455	18,579	43,688	-----	-----	15.8	18.6	-----	-----
1898.....	2,389,393	20,138	43,462	29,557	-----	16.9	18.2	12.4	-----

* From April 5 to December 31, 1867.

† Census years.

‡ Including 83 deaths from townships under the old law. See p. 102.

Table 4.—Births and deaths, with exclusion of stillbirths, registered in Michigan for the years 1867-98, with rates per 1,000 population.

Years.	Population.	Registration returns, 1867-98.			Rates per 1,000 population.			Still- births per 1,000 births.	Still- births per 1,000 deaths.
		Number of births.	Number of deaths.	Number of still- births.	Births.	Deaths.	Still- births.		
1867*.....	993,902	13,979	4,409	+ } 21 —	-----	-----	-----	1.5	-----
1868.....	1,057,288	24,968	8,189	+ } 52 46	23.6	7.7	-----	2.1	5.6
1869.....	1,120,873	26,952	9,016	+ } 141 129	24.0	8.0	+ } 0.1 0.1	5.2	14.3
1870+.....	1,184,059	26,589	10,540	+ } 74 226	22.5	8.9	+ } 0.1 0.2	2.8	21.4
1871.....	1,221,552	25,904	9,460	+ } 88 268	21.2	7.7	+ } 0.1 0.2	3.4	28.3
1872.....	1,259,045	27,692	13,167	+ } 301 204	22.0	10.5	+ } 0.2 0.2	10.9	15.5
1873.....	1,296,588	34,260	13,984	+ } 348 274	26.4	10.8	+ } 0.3 0.2	10.2	19.6
1874+.....	1,334,031	30,687	12,036	464	23.0	9.0	0.3	15.1	38.6
1875.....	1,384,515	31,329	11,361	629	22.6	8.2	0.5	20.1	55.4
1876.....	1,435,000	33,589	11,930	646	23.4	8.3	0.5	19.2	54.2
1877.....	1,485,484	32,675	12,199	720	22.0	8.2	0.5	22.0	59.0
1878.....	1,535,968	34,369	11,973	793	22.4	7.7	0.5	23.1	66.2
1879.....	1,586,453	33,373	13,658	749	21.0	8.6	0.5	22.4	54.8
1880+.....	1,636,937	34,585	15,364	738	21.1	9.4	0.5	21.3	48.0
1881.....	1,691,117	34,058	18,547	691	20.1	11.0	0.4	20.3	37.3
1882.....	1,745,298	36,234	15,633	792	20.8	9.0	0.5	21.9	50.7
1883.....	1,799,478	39,925	16,022	884	22.2	8.9	0.5	22.1	55.2
1884+.....	1,853,658	39,489	17,137	919	21.3	9.2	0.5	23.3	53.6
1885.....	1,893,697	41,111	15,638	1,008	21.7	8.3	0.5	24.5	64.5
1886.....	1,933,735	40,186	17,278	909	20.8	8.9	0.5	22.6	52.6
1887.....	1,973,774	45,329	18,585	897	23.0	9.4	0.5	19.8	48.3
1888.....	2,013,812	47,594	20,406	1,358	23.6	10.1	0.7	28.5	66.5
1889.....	2,053,851	48,070	19,113	1,202	23.4	9.3	0.6	25.0	62.9
1890+.....	2,093,889	50,909	20,245	1,397	24.3	9.7	0.7	27.4	69.0
1891.....	2,130,827	49,722	20,989	1,090	23.3	9.9	0.5	21.9	51.9
1892.....	2,167,765	45,207	20,715	1,014	20.9	9.6	0.5	22.4	49.0
1893.....	2,204,703	46,708	20,963	1,019	21.2	9.5	0.5	21.8	48.6
1894+.....	2,241,641	43,594	19,957	1,002	19.4	8.9	0.4	22.5	50.2
1895.....	2,278,579	45,164	21,648	1,109	19.8	9.5	0.5	24.0	48.7
1896.....	2,315,517	45,048	20,729	1,254	19.5	9.0	0.5	27.1	57.0
1897.....	2,352,455	42,669	-----	1,019	18.1	-----	0.4	23.8	-----
1898.....	2,389,393	42,910	\$ 28,248	+ } 552 1,309	18.0	11.8	+ } 0.2 0.5	12.9	46.1

* From April 5 to December 31, 1867.

† Census years.

‡ For these years two statements are given of the number of stillbirths, the upper figures representing the number returned in births, the lower in deaths.

§ Including 83 deaths in non-registration townships, 9 of which were stillbirths.

COMPILATION OF STILLBIRTHS IN MICHIGAN REGISTRATION REPORTS.

In Table 3 the births and deaths were presented with the inclusion of stillbirths, following the custom established since the beginning of registration in Michigan (1867). This is not the most approved practice among vital statisticians at present, who are accustomed to quote the rates of both births and deaths with stillbirths excluded. This fact should always be borne in mind in comparing the rates given in former volumes of the Michigan Registration Reports with those of other states or countries which omit stillbirths.

In Table 4 the births and deaths, together with the rates per 1,000 estimated population, are given for each year of registration with the omission of stillbirths. Also the ratios of stillbirths to total births and to total deaths are presented. It will be noted that during the first years of registration in Michigan two separate statements of stillbirths were presented, one being derived from births, the other from deaths. After a few years, these returns were compared before compilation, and the total number of stillbirths derived from both sets of returns was employed in the statistics of births and deaths for the year. This system continued down to the present year 1898, when it was found necessary to revert to the old method of compilation, because the returns of births being collected under the old law and arriving at the State Department many months after the certificates of death were returned, a very considerable delay would be required for the comparison. We may note that the number of stillbirths reported on certificates of death alone, 1,300, is greater than the average number obtained in previous years by the comparison of both sets of returns, although the increased accuracy of the registration of stillbirths under the new law is less, as we might expect, than for other classes of returns. The reason for this has been indicated, namely, that we had practically a double enumeration of this particular class of statistics, stillbirths being recorded both as births and as deaths. Hence the statistics of stillbirths in Michigan were proportionately more accurate than those of any other class of returns.

A practical point in the registration of stillbirths, which is not attended to as fully as might be desired, is the fact that only children born dead should be included in this class. Not infrequently deaths are reported as "stillborn" when the age shows that the child lived several hours after birth. When such a return is presented to the registrar, he should call the attention of the reporting physician to the matter, and secure a statement of the cause of death of the newly-born child, if possible. Otherwise the death must be compiled as from unknown cause. It is true that all deaths returned with the cause of death specified as simply "stillborn" are deaths from unknown causes. At some future time statistics will inquire more closely than they do at present into the causes of stillbirths,—whether from disease of the mother or from the accidents attending delivery,—but at present the return of "stillborn" as a cause of death is regarded as sufficient, and removes a certain class of deaths of possibly less importance than those of children who have respired from the ordinary schedules of mortality statistics.

Michigan has long been far in advance of England and some other countries in the attention paid to the registration of this very important kind of statistics. It is only recently in England that agitation has been undertaken for the thorough registration of stillbirths, and while they will not be statistically treated as either births or deaths in the compilations, it is probable that greater attention will be given to their registration in future. While they do not add to the population, they should always be considered as an element of births in connection with studies of fecundity of marriage, while in mortality statistics, they constitute a class of deaths from unknown causes, to which greater attention should be given by public health workers than formerly. Many stillbirths are caused by preventable causes, and a certain proportion are due to criminal measures employed. For the latter reason, the legal importance of an accurate registration of stillbirths is great, as otherwise the deaths of viable children may be reported as stillborn. Owing to these facts it has seemed desirable to continue to require stillbirths to be reported as deaths, as formerly, and in order to insure the same degree of accuracy in their return as in deaths from other causes, to compile them as deaths not only in the *Monthly Bulletin* but also in the Annual Registration Report. They are always stated, however, in such connection that they can be conveniently subtracted from total deaths and in the tables of comparative mortality and natality following, the rates of births and deaths exclusive of stillbirths are given for Michigan.

MICHIGAN VITAL STATISTICS COMPARED WITH THOSE OF OTHER STATES AND COUNTRIES.

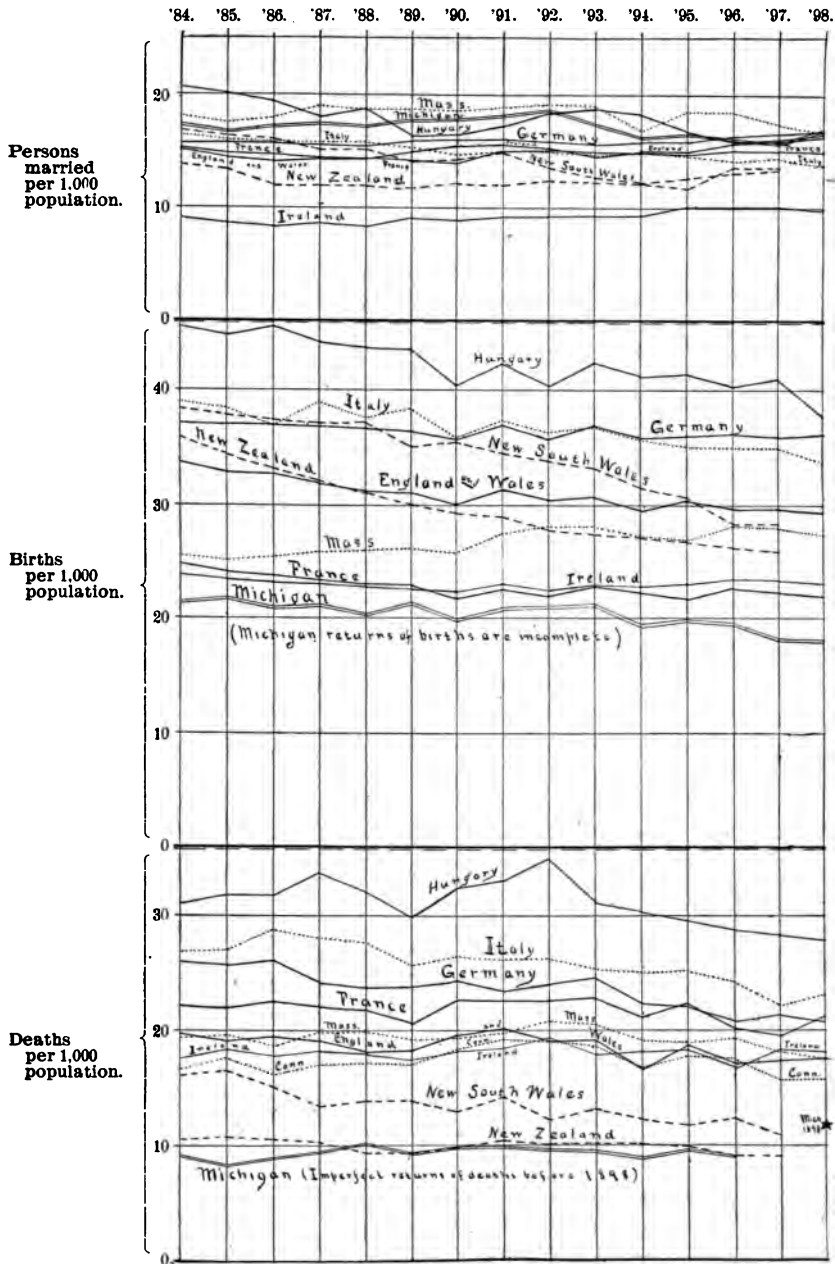
The significance of the vital rates of any state or country cannot be fully known until comparisons have been made with those of others. While the crude marriage, birth and death rates are not sufficient for the formation of absolutely reliable conclusions relative to the exact intensity of the marriage movement, or of the fecundity or sanitary condition of the populations so measured, nevertheless the crude rates, taken without correction for dissimilar constitution of the population, must always form the first step in the comparative study of vital statistics. By means of the data contained in Tables 5, 6 and 7, which are chiefly derived from the tables of international statistics printed in the last report of the Registrar-General of England, the vital rates of Michigan for fifteen years past may be compared with those of various European countries, and also with the rates of certain states in this country and with those of New Zealand and New South Wales, as representative of the vital statistics of Australasia. Some statistics for Japan have also been added from the reports of the Imperial Bureau of Statistics of that country, and are of especial interest as comparing the movement of population of an oriental country with the European, American and Australasian data presented. In Diagram III some of the most typical vital statistics are graphically represented, and enable the movement of the vital rates of Michigan to be conveniently compared with those of other states and countries.

Table 5.—*Persons married per 1,000 living population in certain countries and states during the years 1884-98.*

Country or state.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.
Austria.....	15.9	15.4	15.7	15.8	16.0	15.1	15.1	15.6	15.6	15.9	15.8	16.2	15.9	16.2	15.7
Belgium.....	13.5	13.6	13.4	14.2	14.2	14.5	14.5	14.8	15.4	15.2	15.1	15.5	16.2	16.4	16.6
Denmark.....	15.6	15.1	14.2	14.0	14.2	14.2	13.8	13.6	13.6	14.1	13.9	14.2	14.6	15.0	15.2
France.....	15.3	14.9	14.8	14.5	14.4	14.2	14.0	15.0	15.2	15.0	15.0	14.8	15.2	15.2	15.0
German Empire.....	15.7	15.8	15.8	15.6	15.6	16.0	16.1	16.1	15.9	15.8	15.9	15.9	16.4	16.7	16.9
Prussia.....	16.2	16.4	16.3	16.0	16.0	16.3	16.4	16.3	16.1	16.1	16.1	16.0	16.5	16.8	16.9
Holland.....	14.4	13.9	13.9	14.0	13.8	13.9	14.2	14.2	14.4	14.6	14.4	14.7	14.9	14.8	14.6
Hungary.....	20.6	20.1	19.3	18.0	18.7	16.3	16.4	17.2	18.4	18.7	18.4	16.9	16.0	16.2	16.6
Italy.....	16.5	16.0	15.9	15.9	15.9	15.4	14.7	15.0	15.0	14.8	15.0	14.7	14.2	14.5	13.9
Japan.....							16.1	16.0	17.0	17.3	17.3	17.3	23.5	16.9	21.5
New South Wales....	16.9	16.4	16.1	15.1	15.1	14.1	14.3	14.8	13.6	12.9	12.5	12.8	13.3	13.5	13.4
New Zealand.....	13.9	13.4	12.0	12.0	12.0	11.9	12.2	12.1	12.5	12.4	12.3	11.9	13.7	13.7	13.8
Norway.....	13.7	13.3	13.0	12.5	12.2	12.5	13.0	13.2	12.7	12.9	12.8	13.0	13.4	13.4	14.0
Sweden.....	13.1	13.3	12.8	12.5	11.8	12.0	12.0	11.7	11.4	11.3	11.5	11.7	11.9	12.1	.....
Switzerland.....	13.9	14.0	13.9	14.2	14.2	14.2	14.2	14.4	14.6	14.6	14.6	14.8	15.4	16.2	16.0
United Kingdom.....	14.1	13.6	13.3	13.5	13.5	14.1	14.5	14.6	14.5	13.9	14.2	14.3	15.0	15.2	15.4
England and Wales	15.1	14.5	14.2	14.4	14.4	15.0	15.5	15.6	15.4	14.7	15.1	15.0	15.8	16.0	16.3
Ireland.....	9.1	8.6	8.4	8.6	8.4	9.0	8.9	9.2	9.3	9.4	9.4	10.1	10.1	10.1	9.9
Scotland.....	13.6	13.1	12.6	12.7	12.8	13.3	13.7	13.9	14.1	13.3	13.4	13.7	14.5	14.7	15.1
United States:															
Massachusetts.....	18.2	17.6	18.0	19.0	18.7	18.7	18.6	18.9	19.2	19.1	16.9	18.5	18.5	17.6	16.6
Michigan.....	17.3	16.8	17.2	17.4	17.2	17.8	17.8	18.1	18.6	17.4	16.3	16.6	16.3	15.8	16.9
New Hampshire.....	18.3	17.6	18.2	19.0	18.2	19.4	19.2	20.7	21.3	21.2	20.0	20.5	20.5	19.0	.....
Rhode Island.....	17.2	16.3	17.7	18.0	18.7	17.3	18.4	18.5	19.1	18.7	17.4	18.2	17.0	15.6	15.8

In the upper portion of Diagram III, which displays some of the most important marriage rates shown in Table 5, we note the very considerable degree of uniformity in the number of persons married per thousand population in different states and countries. Ireland is a marked exception, the marriage rates being extremely low; this is due to the large emigration of persons of marriageable age from that country. The Australasian colonies also show comparatively low marriage rates, and New South Wales in particular shows a declining rate of marriage during the period studied. The countries of Europe generally maintain their rates of marriage with little variation. The curve for Michigan, represented by the double line, runs uniformly to the year 1892, shows a decline during the years 1893-97, and in 1898, with more prosperous business conditions, again shows an upward tendency. It is among the highest of those shown in the diagram.

DIAGRAM III.—COMPARATIVE MARRIAGE RATES, BIRTH RATES AND DEATH RATES, 1884-98.



with more accurate rates, and hence, possibly, steps be taken to improve our data; and secondly for the reason that while the absolute rates are unreliable, the fluctuations observed in the imperfect rates may possibly give some correct suggestions as to the actual variations in the birth rates of Michigan from year to year.

The death rate of Michigan is very low as compared with the rates of most European countries and is also lower than those of the eastern states represented in Diagram III (Table 7). This is true not only when we consider the Michigan rates of mortality obtained under the operation of the old and very defective law, but is also true of the death rate for the year 1898, 11.8 per 1,000 estimated population, with the exclusion of stillbirths, as obtained under the new law. It is possible that the year 1898 was an exceptionally favorable year, and indeed, from an examination of the causes of death as presented in the following part of this report, and as already studied in the *Monthly Bulletin of Vital Statistics* for the year 1898, this would seem to be a reasonable supposition. It is also possible that the results of registration of deaths during this, the first calendar year of the operation of the law requiring burial permits, are not so exact as they will be after the law has been in effect several years. While this is true to some extent, still it seems likely that a very excellent degree of approximation to the true number of deaths has been obtained—an absolutely accurate record of deaths does not exist, in all probability, in this country for an entire state area.

The low death rate of Michigan as shown in Diagram III may be due in part to the favorable age distribution of the population as compared with the other states and countries represented. This is rendered more probable by the fact that New Zealand and New South Wales, in common with the other colonies of Australasia, likewise show mortality rates quite unprecedented in the experience of older-settled communities. With a low birth rate, and hence a comparatively small proportion of infants and children at the ages of high mortality, a comparatively recent immigration of young and vigorous persons, few of whom have yet reached advanced years, and with efficient sanitary protection and a favorable climate, it is not unreasonable to suppose that the rate of mortality should be lower than in other communities wanting in one or more of these factors of a low death rate. In time, of course, and especially with the gradual cessation of immigration, which now chiefly affects the northern portion of the State, we may expect the age distribution of our population to approach a more normal type, and our death rate to somewhat increase.

AGE DISTRIBUTION OF POPULATION AS AFFECTING VITAL RATES.

It is the customary practice among sanitarians and health officers in comparing mortality statistics to quote the crude death rates, and from the numerical relations of the death rates per 1,000 population of the cities or states under discussion, to deduce very wide-reaching sanitary conclusions as to greater "healthfulness" or superior methods of "life saving." Almost never we see any attention paid to the causes affecting the constitution of the peoples compared, which may be in themselves a sufficient reason for the observed variations in the rates of death.

We note in Table 7 that the death rate of Connecticut is higher than

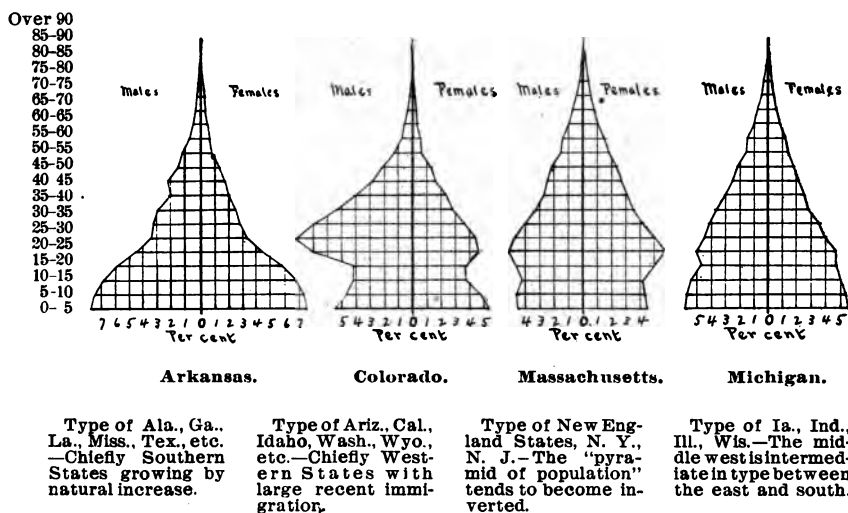
that of Michigan for the year 1898. Of course there can be no comparison between the rates for previous years while Michigan's mortality statistics were grossly defective, but the observed difference in the rates for 1898 is probably pretty constant. It has been observed to run along month after month in the rates presented in the Connecticut and Michigan *Bulletins*, and it will probably be found after a series of years that the Connecticut death rate exceeds the Michigan rate, on the average, by perhaps two deaths per 1,000 population. This general correspondence between the variations from month to month in the recorded mortality of different states, each of which may be said to have different normal death rates, is strongly suggested by the diagram showing the fluctuations of death rates in New York, Connecticut and Michigan, which was printed as a frontispiece to the first volume of the *Michigan Monthly Bulletin of Vital Statistics*. The death rate of Connecticut constantly exceeds that of Michigan, and the rate of New York is uniformly higher than that of Connecticut.

Now what do these differences indicate? Assuming substantial accuracy of registration in these three states, are we entitled to pronounce Michigan more salubrious than Connecticut, and Connecticut than New York on the basis of these general death rates alone? Not at all! It is one of the unfortunate things about statistics, and vital statistics especially are subject to the misconception, that the figures are called upon to express more than they are fairly capable of doing. The death rate is an average and depends upon many fluctuating conditions. It varies with climate and with sanitary improvement, as witness the lowering of the typhoid fever death rate by the installation of efficient sewerage systems. It likewise varies with the density of population and especially with the degree of aggregation into densely packed city communities. There is no reason why urban populations may not in time possess as low a mortality as the most favorably situated rural communities, but under present circumstances this is not usually so. Districts with large urban populations show death rates above the average as a rule.

Even more powerful in its effect upon the average mortality or crude death rate is the age distribution of the population. The death rate of infants under one year of age is very high. Hence a community with a high birth rate, as in some of the European countries shown in Table 6, would tend to show a high death rate from this element of the population. The ages of childhood likewise contribute largely to the mortality of the total population, more particularly from the ravages of acute infectious diseases. These diseases, such as scarlet fever, measles, whooping cough, diphtheria and croup, to which the practical functions of boards of health are quite generally restricted at present, are largely preventable, hence a comparison of the death rates of children under ten years of age in different communities would be far preferable as a test of sanitary efficiency to the mere comparison of the total death rates. Passing on, it is evident that states or cities with an unusually large proportion of the population at the young and active period of life should show a very low death rate. At the older ages, where the mortality again becomes high, we have a cause of increased death rates which sometimes tends to counterbalance gain from decreased numbers of children. These

varying relations in the age constitution of the people ought to be particularly attended to in comparing American statistics. As shown by the following diagram copied from the atlas of the last U. S. census for four fairly typical states, the range or variation is a wide one, both in the age and sex constitution. Michigan, with the other states of the middle west, occupies an intermediate position between the eastern and southern states, but unfortunately none of the latter have accurate systems of registration of deaths, so that the effect upon the mortality cannot be directly traced.

DIAGRAM IV.—AGE DISTRIBUTION OF POPULATION, BY SEX, IN TYPICAL STATES (U. S. CENSUS, 1890).



Summing up, we shall find at least three important elements to be considered whenever it is proposed to derive inferences from the death rates of states or cities as ordinarily published. These are (1) Climate, in its broadest sense, including all of the telluric conditions bearing upon the life and health of man; (2) Sanitation, or the hygienic status depending upon organized efforts to improve the public health by the restriction and prevention of communicable diseases; and (3) Constitution of the people, both quantitative and qualitative. Of the latter, the factor of age distribution may be taken as a typical example, being one of the most important elements, but sex constitution, color, nativity and parent nativity, density of population, with proportion of urban and rural, etc., may be mentioned as others not to be lost sight of. The great difficulty in the practical rational employment of vital statistics for a given purpose,—and they are most commonly employed to furnish evidence in regard to salubrity of climate or sanitary efficiency,—is that they are all involved in the problem together, and it is only by a very rigorous process of exclusion that a certain result can be attributed to any single element. It thus becomes extremely difficult to so modify the general death rate that these various elements may be given their proper weight,

and thus the essential condition of statistical comparisons that like things only be compared with like be fulfilled. The nearest approach to this that we have at present is by means of the method of mortality indices, which give proper consideration to the age distribution of population by employing co-efficients based upon its percentage constitution for certain ages to modify the crude death rate. Examples of this procedure may be found in the publications of the Registrar-General of England, and the plan has been especially advocated by Dr. Josef Körösi and other members of the International Statistical Institute. So far, little attempt has been made at its application in this country, although it would undoubtedly cast light upon some of the apparent differences in rates between various cities of the east and west.

References have been made in the Michigan Registration Reports to the importance of this subject from time to time, and the value of the method for establishing the validity of rates in the same state for widely separated years, when considerable changes have taken place in the constitution of the population, has been pointed out (Michigan Registration Report, 1893, p. 99) as well as for comparing different states, cities or countries. It will not be practicable to attempt to apply it further at the present place, but the great importance of the subjects warrants some reference to it, and as soon as the results of the U. S. census of 1900 are at hand, an attempt should be made to adjust the Michigan data by this method. In the meantime, it is well to use general or crude death rates only with considerable reservation, to employ rates for definite age periods in all comparisons as far as possible, and when comparisons of crude rates are necessarily made, to refer to the possible factors of modification as in the following extract from the *Michigan Bulletin of Vital Statistics* (November, 1897):

*Comparison of death rates and other demographic data of Michigan with the corresponding data of New York and Connecticut.**

Demographic data.	Michigan.	New York.	Conn.
Death rates per 1,000 estimated population, September, 1897.....	13.4	17.8	15.4
Death rates per 1,000 estimated population, October, 1897.....	12.8	16.8	14.9
Percentage of deaths of children under 5 years of age to total deaths, September, 1897.....	35.2	35.5	32.7
Percentage of deaths of children under 5 years of age to total deaths, October, 1897.....	31.0	22.6	23.7
Gross area in square miles.....	58,915	49,170	4,990
Land area in square miles.....	57,430	47,620	4,845
Population, U. S. census, 1890.....	2,093,889	5,997,853	746,258
Density of population—persons to square mile of land area, 1890.....	36.46	125.95	154.08
Urban population—per cent of total population, 1890.....	29.08	60.02	51.68
Percentage of children under 5 years of age to total population, 1890.....	11.34	10.02	9.28
Percentage of persons aged 60 years and over to total population, 1890.....	6.95	7.86	9.29

*The death rates are from the *Monthly Bulletins* published by the three States, and are subject to slight additions for delayed returns. The data on population are from the Eleventh U. S. Census, *Population*, Parts I and II.

DENSITY OF POPULATION OF MICHIGAN COUNTIES.

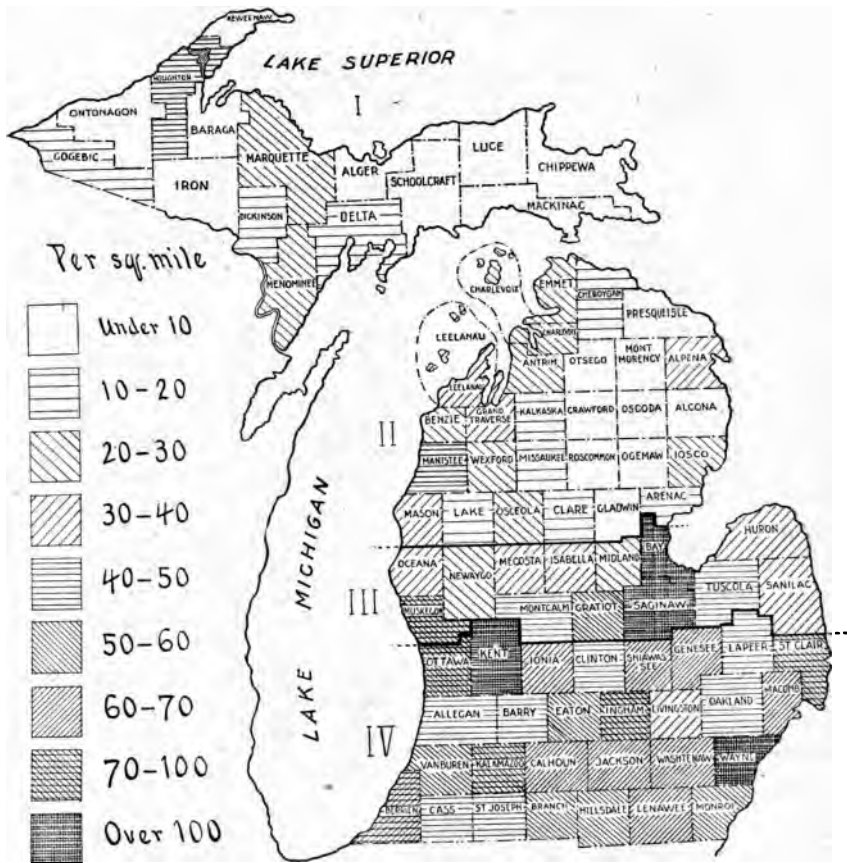
The same factors affecting the usefulness of the general death rate of Michigan when it sought to make comparisons of with those of other states and countries also affect, to a very considerable degree the com-

parisons of the death rates of cities and counties within the State. This is indicated by the great differences in density of population among the counties, as shown by Table 8 and the accompanying map. Where the population is very sparse, as in the Upper Peninsula and the northern section of the Lower Peninsula (see geographical sections indicated upon the map), it will generally be found that the population is of the type of all newly settled regions, namely, possessing a surplus of males at the active ages and a great deficiency of elderly people as compared with the older settled portion of the State. The counties of the Upper Peninsula also have a larger proportion of their population aggregated into the cities than those of the agricultural portions of the State, and are very largely composed of recent immigrants. These differences have a very profound influence on the vital rates.

Table 8.—*Density of population of Michigan, showing groups of counties by geographical sections.*

State and counties, by geographical sections.	Population, 1894.	Persons per square mile, State Census, 1894.	State and counties, by geographical sections.	Population, 1894.	Persons per square mile, State Census, 1894.
STATE OF MICHIGAN...	2,241,641	39.5	III.—CENTRAL COUNTIES...	435,132	50.0
I.—UPPER PENINSULA.....	206,590	12.6	Bay.....	61,304	137.3
Alger.....	1,385	1.5	Gratiot.....	28,776	50.5
Baraga.....	4,232	4.6	Huron.....	32,256	38.5
Chippewa.....	15,322	9.4	Isabella.....	21,439	37.2
Delta.....	19,262	16.6	Mecosta.....	20,729	36.7
Dickinson.....	14,700	19.1	Midland.....	13,218	25.9
Gogebic.....	14,083	12.7	Montcalm.....	34,158	48.1
Houghton.....	44,175	43.7	Muskegon.....	37,324	74.3
Iron.....	5,293	4.5	Newaygo.....	19,125	22.6
Keweenaw.....	2,806	8.4	Oceana.....	16,599	30.8
Luce.....	2,348	2.6	Saginaw.....	81,847	101.4
Mackinac.....	7,237	7.1	Sanilac.....	33,945	35.3
Marquette.....	38,008	20.6	Tuscola.....	34,412	42.4
Menominee.....	23,740	22.7			
Ontonagon.....	6,873	5.2	IV.—SOUTHERN COUNTIES	1,342,596	77.1
Schoolcraft.....	7,127	6.0	Allegan.....	39,189	47.3
II.—NORTHERN COUNTIES	257,328	17.9	Barry.....	23,699	43.0
Alcona.....	5,418	8.0	Berrien.....	45,635	80.4
Alpena.....	17,717	30.6	Branch.....	26,207	52.3
Antrim.....	12,427	25.9	Calhoun.....	47,472	68.0
Arenac.....	6,943	18.9	Cass.....	21,176	43.3
Benzle.....	8,063	25.3	Clinton.....	26,262	46.1
Charlevoix.....	10,925	28.3	Eaton.....	32,618	57.0
Cheboygan.....	13,900	19.0	Genesee.....	40,553	63.2
Clare.....	7,976	14.0	Hillsdale.....	30,272	50.3
Crawford.....	2,710	4.8	Ingham.....	39,689	71.7
Emmet.....	10,382	24.4	Ionia.....	34,820	60.8
Gladwin.....	4,900	9.5	Jackson.....	46,535	65.3
Grand Traverse.....	17,515	37.7	Kalamazoo.....	42,056	75.2
Iosco.....	12,340	22.3	Kent.....	121,938	143.0
Kalkaska.....	5,640	10.1	Lapeer.....	28,879	43.6
Lake.....	5,897	10.3	Lenawee.....	48,541	64.2
Leelanau.....	9,395	30.7	Livingston.....	20,437	35.3
Manistee.....	26,114	47.9	Macomb.....	32,387	68.6
Mason.....	18,422	37.4	Monroe.....	33,181	59.1
Missaukee.....	6,955	12.3	Oakland.....	42,676	47.5
Montmorency.....	2,438	4.4	Ottawa.....	39,083	70.6
Ogemaw.....	5,638	9.9	Shiawassee.....	32,854	61.1
Osceola.....	16,475	28.7	St. Clair.....	54,321	78.1
Oscoda.....	1,806	3.2	St. Joseph.....	25,087	49.9
Otsego.....	4,794	9.2	Van Buren.....	31,059	50.8
Presque Isle.....	5,911	8.8	Washtenaw.....	43,509	61.3
Roscommon.....	1,657	3.1	Wayne.....	292,461	486.1
Wexford.....	14,047	24.6			

MAP I.—DENSITY OF POPULATION IN MICHIGAN BY COUNTIES, 1894, WITH GEOGRAPHICAL SECTIONS.



The geographical sections indicated on the above map, and fully stated, with inclusion of counties, in Table 8, are the same as those employed by the United States Weather Bureau for the statement of meteorological statistics. Hence the comparison of causes of death, as presented in the following portion of this report, with meteorological conditions, becomes very easy.

It may be noted that the unshaded portion of this map, representing counties having an average population per square mile of less than ten persons, corresponds quite closely with the non-registration area (townships having a population of less than five persons to the square mile according to the last census), a list of which is given on page 102. This region, while large in area, embracing the greater portion of the Upper Peninsula and a large part of the interior of the northern part of the Lower Peninsula, has a quite insignificant population (about 30,000) as compared with the remainder of the State. The absence of prompt returns of deaths from these townships does not appreciably affect the general mortality returns of the State.

Table 9.—Deaths, marriages, divorces and births in Michigan, by counties, for the year 1898, with rates per 1,000 estimated population.

State and counties.	Estimated population of Michigan, June, 1898.*	Number of deaths registered, 1898.†	Number of marriages registered, 1898.	Number of divorces granted, 1898.	Number of births registered, 1898.	Rates per 1,000 population, 1898.			
						Deaths.	Persons married.	Persons divorced.	Births.
STATE.....	2,389,393	29,557	20,138	1,808	43,462	12.4	16.9	1.5	18.2
Alcona.....	5,427	40	37	4	72	7.4	13.6	1.5	13.3
Alger.....	1,532	79	66	0	101	* 51.6	* 86.2	-----	* 65.9
Allegan.....	39,417	430	354	45	670	10.9	18.0	2.3	17.0
Alpena.....	19,853	195	141	8	295	9.8	14.2	0.8	14.9
Antrim.....	14,441	160	131	5	221	11.1	18.1	0.7	15.3
Arenac.....	8,203	86	82	1	212	10.5	20.0	0.2	25.8
Baraga.....	5,428	28	18	0	103	5.2	6.6	-----	19.0
Barry.....	23,615	268	228	25	324	11.3	19.3	2.1	13.7
Bay.....	66,196	739	495	17	1,373	11.2	15.0	0.5	20.7
Benzie.....	10,889	96	88	12	170	8.8	16.2	2.2	15.6
Berrien.....	49,985	574	444	36	611	11.5	17.8	1.4	12.2
Branch.....	25,623	348	255	352	352	13.6	19.9	2.0	13.7
Calhoun.....	51,443	660	432	70	599	12.8	18.3	2.7	11.6
Cass.....	21,399	273	220	23	262	12.8	20.6	2.1	12.2
Charlevoix.....	12,416	147	102	12	159	11.8	16.4	1.9	12.8
Cheboygan.....	15,814	213	138	14	292	13.5	17.5	1.8	18.5
Chippewa.....	18,625	215	143	10	296	11.5	15.4	1.1	15.9
Clare.....	8,394	65	67	10	159	7.7	16.0	2.4	18.9
Clinton.....	26,015	280	252	28	449	10.8	19.4	2.2	17.3
Crawford.....	2,458	25	27	1	39	10.6	22.0	0.8	15.9
Delta.....	23,194	273	166	14	482	11.8	14.3	1.2	20.8
Dickinson.....	15,446	206	118	1	552	13.3	15.3	0.1	35.7
Eaton.....	33,142	363	322	23	348	11.0	19.4	1.4	10.5
Emmet.....	12,589	171	148	10	238	13.6	23.5	1.6	18.9
Genesee.....	41,676	504	391	39	460	12.1	18.8	1.9	11.0
Gladwin.....	5,592	48	39	2	134	8.6	13.9	0.7	24.0
Gogebic.....	15,000	206	150	6	481	13.7	20.0	0.8	32.1
Gd. Traverse.....	21,675	236	206	33	253	10.9	19.0	3.0	11.7
Gratiot.....	28,884	353	319	33	471	12.2	22.1	2.3	16.4
Hillsdale.....	29,884	384	287	24	300	12.8	19.2	1.6	10.0
Houghton.....	52,961	728	509	9	2,020	13.7	19.2	0.3	38.1
Huron.....	35,967	353	248	3	765	9.8	13.8	0.2	21.3
Ingham.....	41,712	442	407	69	515	10.6	19.5	3.3	12.3
Ionia.....	36,839	433	297	15	470	11.8	16.1	0.8	12.8
Iosco.....	9,450	117	73	1	236	12.4	15.4	0.2	25.0
Iron.....	5,562	41	41	2	30	7.4	14.7	0.7	5.4
Isabella.....	24,094	201	218	12	386	8.3	18.1	1.0	16.0
Jackson.....	48,039	625	496	64	706	13.0	20.6	2.7	14.7
Kalamazoo.....	44,839	679	433	57	591	15.1	19.3	2.5	13.2
Kalkaska.....	6,120	61	63	5	95	10.0	20.6	1.6	15.5
Kent.....	133,954	1,672	1,223	175	2,282	12.5	18.3	2.6	17.0
Keweenaw.....	2,581	30	10	0	71	11.6	7.7	-----	27.5
Lake.....	5,289	49	40	11	123	9.3	15.1	4.2	23.3
Lapeer.....	23,545	343	241	12	389	12.0	16.9	0.8	13.6
Leelanau.....	10,989	128	80	12	242	11.6	14.6	2.2	22.0
Lenawee.....	48,634	643	460	39	565	13.2	18.9	1.6	11.6
Livingston.....	20,016	253	179	8	257	12.6	17.9	0.8	12.8
Luce.....	2,241	15	19	1	48	6.7	17.0	0.9	21.4
Mackinac.....	6,644	90	51	5	97	13.5	15.4	1.5	14.6
Macomb.....	32,961	465	269	22	585	14.1	16.3	1.3	17.7
Manistee.....	27,998	308	192	6	740	11.0	13.7	0.4	26.4
Marquette.....	39,937	469	284	9	1,301	11.7	14.2	0.5	32.6
Mason.....	20,459	242	130	3	400	11.8	12.7	0.3	19.6
Meecosta.....	21,761	244	182	12	289	11.2	16.7	1.1	13.3
Menominee.....	24,945	261	130	9	627	10.5	10.4	0.7	25.1
Midland.....	15,779	156	121	10	233	9.9	15.3	1.3	15.1
Missaukee.....	8,862	61	66	9	216	6.9	14.9	2.0	24.4
Monroe.....	34,025	417	304	13	617	12.3	17.9	0.8	18.1

* † See note at end of tables.

Table 9.—CONCLUDED.—Deaths, marriages, divorces and births in Michigan, by counties, for the year 1898, with rates per 1,000 estimated population.

Counties.	Estimated population of Michigan, June, 1898.*	Number of deaths registered, 1898.†	Number of marriages registered, 1898.	Number of divorces granted, 1898.	Number of births registered, 1898.	Rates per 1,000 population, 1898.			
						Deaths.	Persons married.	Persons divorced.	Births.
Montcalm.....	35,679	417	302	23	478	11.7	16.9	1.3	13.4
Montmorency....	3,389	20	20	3	30	5.9	11.8	1.8	8.9
Muskegon.....	34,635	435	262	34	586	12.6	15.1	2.0	16.9
Newaygo.....	17,774	189	155	16	205	10.6	17.4	1.8	11.5
Oakland.....	44,107	625	318	38	465	14.2	14.4	1.7	10.5
Oceana.....	17,500	251	157	18	318	14.3	17.9	2.1	18.2
Ogemaw.....	5,693	60	65	2	95	10.5	22.8	0.7	16.7
Ontonagon.....	9,990	18	27	2	37	1.8	5.4	0.4	3.7
Oscoda.....	18,320	182	141	10	340	9.9	15.4	1.1	18.6
Oscoda.....	1,708	3	7	1	13	1.8	8.2	1.2	7.6
Otsego.....	5,316	62	53	5	97	11.7	19.9	1.9	18.2
Ottawa.....	42,808	480	330	5	850	11.2	15.4	0.2	19.9
Presque Isle....	7,135	45	61	0	136	6.3	17.1	-----	19.1
Roscommon.....	1,281	5	16	0	20	3.9	25.0	-----	15.6
Saginaw.....	81,421	899	656	58	1,711	11.0	16.1	1.4	21.0
Sanilac.....	35,301	396	295	6	686	11.2	16.7	0.3	19.4
Schoolcraft....	8,436	76	58	4	187	9.0	13.8	0.9	22.2
Shiawassee.....	34,756	410	335	46	374	11.8	19.3	2.6	10.8
St. Clair.....	56,537	709	463	29	803	12.5	16.4	1.0	14.2
St. Joseph.....	24,818	292	213	17	314	11.8	17.2	1.4	12.7
Tuscola.....	36,316	369	290	21	578	10.2	16.0	1.2	15.9
Van Buren.....	31,577	421	311	39	401	13.3	19.7	2.5	12.7
Washtenaw.....	44,808	585	358	30	504	13.1	16.0	1.3	11.2
Wayne.....	327,808	5,269	2,444	249	8,550	16.1	14.9	1.5	26.1
Wexford.....	16,816	147	169	28	302	8.7	20.1	3.3	18.0

* Population estimated by average annual increase as shown by State census of 1894 over U. S. census of 1890. Where counties have made unusually rapid growth since the last census, the estimates of population cannot be depended upon, nor are the rates based thereon reliable.

† Including 83 deaths from non-registration to townships. See p. 102.

COMPARISON OF VITAL RATES OF COUNTIES.

In comparing the vital rates for the different counties of Michigan as exhibited in Table 9 constant allowance must be made for the varying age and sex distribution, proportion of native and foreign born, relative amounts of urban and rural population, etc., as some quite misleading conclusions may be drawn if these important factors are left out of consideration. It should also be constantly borne in mind that very small numbers form insufficient bases for statistical conclusions, and that in some of the counties the populations and the returns are both too small for satisfactory results.

It may be useful, as an illustration of the corrections to be made in comparing the vital statistics of different counties, to take a typical example and analyze the data to some degree. Thus the counties of Marquette and St. Joseph may be selected, as they have very nearly identical crude death rates (11.7 and 11.8 per 1,000 estimated population), and the inquiry may be made how far the vital rates given for these counties are fairly representative of the relative conditions.

The comparative data of population and vital statistics are presented in Table 10. Marquette county is of comparatively recent growth, having had a population of only 2,821 in 1860. It increased from 25,394 in 1880 to 39,521 in 1890, after which date, according to the State census

of 1894, a slight decrease was shown. St. Joseph county had nearly as large a population in 1860, 21,262, as at present. The population has been practically stationary from 1870, a slight decrease appearing by the last two censuses. The prosperity of Marquette county is chiefly dependent upon the iron mining industry, while St. Joseph county is agricultural in character, and of late years distinguished for fruit-growing. The density of population is over twice as great in St. Joseph county as in Marquette county (49.9 and 20.6 persons per square mile), and the difference in actual occupation of the land is even greater than these figures indicate, since nearly three-fourths of the inhabitants of Marquette county (72.0 per cent) are residents of cities, while only about one-fourth of the population of St. Joseph county dwell in cities.

The large extent to which the population of Marquette county is indebted to foreign immigration is shown by the percentage of persons of foreign birth in 1894, 46.1 per cent as compared to only 9.4 per cent for St. Joseph county. The proportion of the native born, of course, includes the children born in this country of foreign parents, so that the actual foreign element is much greater than indicated by the above ratios. Out of the native born population of Marquette county, only 7.8 per cent have both parents native Americans, as compared with a percentage of 68.6 in St. Joseph county for this class. The natives with both parents foreign are respectively 83.1 and 19.8 per cent of the total in Marquette and St. Joseph counties. This omits from consideration the children born of mixed parent-nativity.

The age distribution of the population according to the last census shows about twice as many infants under one year of age and children under five years of age in Marquette county as in St. Joseph county. There is a somewhat larger proportion of adults at the ages of greatest activity and bodily soundness in Marquette county, namely from 20 to 39 years, but the proportion of older persons is markedly greater in St. Joseph county. These differences must have a considerable effect upon the death rates.

The number of deaths and the corresponding death rate per 1,000 population is shown for each county according to the same age periods as given for the population. The infant death rate of Marquette county (82.6) is somewhat larger, but not remarkably so, than the corresponding rate for St. Joseph county (69.4). In fact, the death rates at all of the ages given are higher in Marquette county than in St. Joseph county, except for the ages 10-14 and 80 years and over. It should be understood that too few deaths are stated for some of these periods to afford reliable inferences.

The causes of death also vary, as might be inferred from the different age constitutions of the population. Epidemic diseases, including the common exanthemata, are nearly equally prevalent, but taking into consideration the greater number of children in the Upper Peninsular county, they may be considered less so in Marquette than in St. Joseph county in proportion to susceptible population. The "local diseases," especially those of the nervous system and of the heart and circulatory apparatus, are more important as causes of death in St. Joseph county than in Marquette, as also are the "other general diseases," which include tuberculosis and cancer. These diseases increase in proportion to the advance of life. Puerperal diseases and diseases of infancy are

Table 10.—Comparison of the vital statistics of two counties in Michigan.

	Marquette.		St. Joseph.	
	Number.	Per cent.	Number.	Per cent.
Population, State census, 1894.	38,008	100.0	25,087	100.0
Native born	20,477	53.9	22,717	90.6
Males	10,217	26.9	11,458	45.7
Females	10,260	27.0	11,259	44.9
Parents both native	2,975	7.8	17,214	68.6
Parents both foreign	31,573	83.1	4,972	19.8
Foreign born	17,531	46.1	2,370	9.4
Males	9,964	26.2	1,279	5.1
Females	7,567	19.9	1,091	4.3
Cities	27,353	72.0	5,974	23.8
<i>Ages:</i>				
Under 1 year	1,401	3.7	432	1.7
1 to 4 years	4,538	11.9	1,726	6.9
Total under 5 years	5,939	15.6	2,158	8.6
5 to 9 years	4,824	12.7	2,316	9.2
10 to 14 years	4,049	10.7	2,382	9.5
15 to 19 years	3,453	9.1	2,393	9.5
20 to 39 years	13,234	34.8	7,643	30.5
40 to 59 years	5,233	13.8	5,344	21.3
60 to 79 years	1,202	3.2	2,589	10.3
Over 80 years	62	0.2	227	0.9
Unknown ages	12	0.03	35	0.01
Deaths, 1898.	469	11.7	292	11.8
Stillbirths	41	...	5	...
Deaths under 1 year	116	82.8	30	69.4
Deaths aged 1 to 4 years	45	9.9	13	7.5
Total under 5 years	161	27.1	43	19.9
Deaths from 5 to 9 years	9	1.9	3	1.3
Deaths from 10 to 14 years	10	2.5	6	2.5
Deaths from 15 to 19 years	14	4.1	13	5.4
Deaths from 20 to 39 years	99	7.5	35	4.6
Deaths from 40 to 59 years	60	11.5	48	9.0
Deaths from 60 to 79 years	66	54.9	98	37.8
Deaths from 80 and over	8	129.0	41	180.6
Deaths at unknown ages	1	...	...	...
<i>Causes of death:</i>				
Epidemic diseases	34	85.1	20	80.6
Other general diseases	74	185.3	56	225.6
Diseases of the nervous system	48	120.2	45	181.3
Diseases of the circulatory system	26	65.1	45	181.3
Diseases of the respiratory system	68	170.3	35	141.0
Diseases of the digestive system	50	125.2	28	112.8
Diseases of the genito-urinary system	30	75.1	10	40.3
Diseases of the puerperal period	11	27.5	2	8.0
Diseases of the skin	3	7.5	1	4.0
Diseases of the locomotor system	...	...	1	4.0
Malformations	3	7.5	1	4.0
Diseases of infancy	25	62.6	6	24.2
Diseases of old age	4	10.0	3	12.1
Violence	43	107.7	15	60.4
Ill-defined causes	9	22.5	19	76.6
Persons married, 1898.	568	14.2	426	17.2
Unmarried persons aged 15-39 years	8,376	...	4,894	...
Persons married aged 15-39 years	545	...	390	...
Marriage rate per 1,000, persons aged 15-39 years	...	65.1	...	79.7
Births, 1898	1,301	32.6	314	12.7
Females of child-bearing age, 16-45 years, State census.	...	...	...	...
1894	8,033	...	5,550	...
Birth rate per 1,000, females of child-bearing age	...	162.0	...	56.6

more numerous in Marquette county, as might be expected from the greater number of births, as shown below.

In summing up, it may be said that it is difficult to derive any definite general statement as to the comparative sanitary condition of the two counties from the data presented, which, indeed, should be studied for much longer than a single year to yield results of unimpeachable value. This study is presented in part to point out the difficulties that stand in the way of estimating the relative "healthfulness" of communities from the simple comparison of their crude death rates. The most satisfactory comparisons that can be made at the present time would be those dependent upon the incidence of a given disease, of well-defined character, upon certain definite age periods, the same extending through a period of years so that the accident of unusual epidemic prevalence can be eliminated. Thus diphtheria could be studied for the years under fifteen, scarlet fever for the years under ten, etc., and thus the fallacies of comparing very dissimilar populations be largely eliminated. This would perhaps be preferable to attempting to find some general expression which will accurately measure the mortality, with full reference to variations in population.

If, however, it be desired to obtain a single expression as an indicator of the mortality, the "mortality index," or some expression derived in a similar manner may prove more reliable than the crude death rate. It is unnecessary for the present purpose to refer to the standard adopted by the International Statistical Institute and based upon the population of Sweden. We may employ substantially the same system by endeavoring to show what the death rate of Marquette county would be if it had a like population (considered with respect to age distribution only), as the population of St. Joseph county. Taking the death rates of Marquette county as given in Table 10 for each age period shown, and multiplying them by the ratio of the population at each age period to total population in St. Joseph county, we obtain, after adding the products and dividing by 100 per cent, a mortality index for Marquette county based on the age constitution of St. Joseph county as a standard, and hence directly comparable with the crude death rate of St. Joseph county. This index is 14.4 per 1,000, and indicates that the true mortality of Marquette county is somewhat higher than that of St. Joseph county, contrary to what the crude death rates would seem to indicate.

A comparison of the marriage rates of the two counties, based upon the population and the persons married between the ages of 15 and 39, which contribute most largely to the total number of marriages, shows that the crude marriage rates are entirely satisfactory as representative of the actual conditions. The rate is probably about twenty per cent higher in the southern county, whichever method of computation be employed.

Coming to the birth rates, the difference in favor of Marquette county is very marked. Nearly three times as many children are born in Marquette county as in St. Joseph county in proportion to the total population, and since the marriage rate of the latter somewhat exceeds, the fecundity of marriage, or the number of children to a family, must be fully three times as great in Marquette county as in St. Joseph county. When we make comparison of the number of births with the number

of females of childbearing age, the disproportion in favor of Marquette county is only increased. We may note that the condition of a low birth rate, with unimpaired marriage rate, is characteristic of many of the older settled counties of the State, which are inhabited almost exclusively by native Americans. In fact, certain counties would show an even more intense depression of natality than St. Joseph county, which has not been taken as an extreme case, but as fairly typical of a wide range of population in Southern Michigan.

If these remarks have suggested the necessity of careful study and the use of caution in employing the data presented in Table 9, their purpose will have been fully accomplished. Rates and ratios, while somewhat more refined than the elementary data of statistics, are themselves in need of further elucidation before they can be freely employed, and herein lies one of the important functions of the text of a statistical report.

PART II.—DEATHS AND CAUSES OF DEATHS IN MICHIGAN DURING THE YEAR 1898.

The subject of mortality is usually the most valuable portion of a registration report, and for Michigan in particular, the results of the registration of deaths for the calendar year 1898 must be considered to possess unusual interest for the reason that they include the first fruits of the registration law for deaths which went into effect in 1897. The general results of the registration obtained under the new law may be examined in Diagram I (*frontispiece*), where the incidence of mortality from all causes by months and by age periods, with distinction of sex, and also the relative importance of certain leading causes of death may be noted. This diagram contains the first truthful presentation of the fluctuations of the death rate in this State during the months of the year that has ever been made, and the relative death rates, although, of course, representing the results of only a single year, are probably more satisfactory than any statistics on this subject previously collected.

The total number of deaths returned for the year 1898 was 29,557, including 83 deaths reported from townships under the old law. This number corresponds to a death rate of 12.4 per 1,000 estimated population, as shown in Table 3, p. xxviii, in which comparisons may be made with the returns for previous years and with the corresponding death rates. The increase of mortality for the year is, of course, only apparent, as the enumeration of deaths by the supervisors and assessors under the old law is known to have been grossly imperfect. This imperfection not only affected the total numbers of deaths returned, but also vitiated the returns by months, so that in the table showing the average number of deaths per diem in Michigan (Table 1. p. xx) only the deaths received from registrars under the new law are included.

Table 4, p. xxix, presents data similar to that contained in Table 3, but omits stillbirths, so that the rates may be used for comparisons with those of other states and countries, as is done in Table 7, p. xxxv, illustrated in part in Diagram III, p. xxxiii. This diagram is of especial value as an indication of the position that the statistics of Michigan occupy when studied in connection with those of the world at large, but the more favorable age distribution of the population in Michigan must be considered in making comparisons with older communities.

In Table 9, p. xlii, the deaths returned from the several counties of Michigan are shown, together with the death rates per 1,000 estimated population, in connection with the statistics of births, marriages and divorces. As explained in the text in connection with this table, in which an illustrative example is given, a satisfactory comparison of the vital statistics of two counties involves something more than the mere matching of the crude death rates; nevertheless, this table will be found

valuable for reference as giving a general view of the results of registration for the year.

Having thus referred to the tables relating to deaths contained in Part I of this report, it may be well to state that all of the data in those tables, as well as all of that in this part of the report, so far as it relates to the mortality of the year 1898, is derived directly from the primary tables relating to deaths and the causes of deaths, as printed on pages 1 to 102. A list of these primary tables appears on page 2, with which general reference the necessity of constant reference to the source of the statistics employed in the following pages may be obviated.

As in previous reports, this portion is divided into two sections, viz.: Section I.—The Incidence of Deaths, by months, sex, age, geographical location, etc., and Section II.—The Causes of Death. It should not be understood that the second division fails to study the factors mentioned in the preceding group, but its distinctive feature is that it classifies them with reference to particular diseases, instead of simply showing their relation to total mortality.

SECTION I.—INCIDENCE OF DEATHS IN MICHIGAN DURING THE YEAR 1898.

The tables in this section contain statements in regard to the incidence of deaths in the State during the year 1898, arranged to show the following particulars: (1) Deaths from all causes by months; (2) number and proportion of each sex among the decedents; (3) deaths by ages of decedents; (4) geographical distribution of deaths; and (5) location as urban and rural. Herewith is presented a brief statement of the more prominent facts contained in this section:

Following are some of the most important facts relative to the occurrence of deaths from all causes during the year 1898:

Total number of deaths returned, 1898.....	29,557
Death rate per 1,000 estimated population, 1898.....	12.4
Deaths reported under new law, 1898.....	29,474
Death rate per 1,000 estimated reporting population, 1898.....	12.5

The latter figures relative to deaths returned by registrars under the law of 1897 are used as the basis of the discussions in this report unless otherwise stated. For statement of deaths returned from non-registration districts under the old law, see page 102. Following the practice obtaining for many years in these reports, stillbirths are included in the total of deaths returned, and must be deducted for comparisons with most other states and countries:

Stillbirths registered, 1898.....	1,300
Stillbirth rate per 1,000 estimated population, 1898.....	0.5

As to the monthly incidence of deaths, we have:

More than average mortality, 1898.....	February, March, April, May, August, September.
Less than average mortality, 1898.....	January, June, July, October, November, December.
Maximum mortality, 1898.....	April, 2,751 deaths or 14.3 per 1,000.
Minimum mortality, 1898.....	June, 2,119 deaths or 11.0 per 1,000.

By sex, there were:

Males dying in Michigan, 1898.....	15,624 or 12.7 per 1,000 male inhabitants.
Females dying in Michigan, 1898.....	13,809 or 11.9 per 1,000 female inhabitants.
Ratio of death rate of males to death rate of females, 1898.....	107 per cent.

By age periods there were, inclusive of stillbirths, deaths as follows:

Under 1 year of age.....	5,496 or 19.6 per cent
Under 5 years of age.....	7,548 or 26.8 per cent
Aged 5 to 14 years.....	1,285 or 4.6 per cent
Aged 15 to 64 years.....	11,207 or 39.8 per cent
Aged 65 years and over.....	8,087 or 23.8 per cent

By geographical sections, referring to the groups of counties represented in the map on page xli, we have the following:

Deaths in the Upper Peninsula.....	2,665 or 12.6 per 1,000 estimated population
Northern counties.....	2,960 or 11.0 per 1,000 estimated population
Central counties.....	5,002 or 11.1 per 1,000 estimated population
Southern counties.....	18,847 or 13.3 per 1,000 estimated population

Distinguished as urban and rural there were the following:

Deaths in cities.....	12,704 or 43.1 per cent; death rate 13.6 per 1,000
Deaths in country.....	16,770 or 56.9 per cent; death rate 11.8 per 1,000

DEATHS BY MONTHS AND QUARTERS, 1898.

In Table 11 a comparative statement of the deaths in Michigan by months and quarters during the year 1898 may be found, together with certain ratios intended to facilitate comparisons of the monthly mortality. A considerable degree of uniformity in the monthly returns prevailed during the year, the minimum, June, 2,119 deaths, being less by only 638 deaths than the month of maximum number, which was March, with 2,757 deaths. It is probable that the year was a somewhat atypical one in this respect.

Fully as great uniformity prevailed among the quarters of the year, the first three showing a range of only 63 deaths, while the fourth quarter, which was the healthiest of the year, was only 354 below the maximum or first quarter.

As the calendar months are of unequal length, it follows that if the same degree of mortality prevailed during two months, the one with the less number of days would show an apparently less incidence of deaths. Hence it is necessary in order to make satisfactory comparisons to eliminate the inequality of the months, and compare the actual degree of prevalence in months of standard length, or calendar months treated by a proper multiplier to reduce them to the average. This object we may even more conveniently obtain by finding the average daily number of deaths in each month, and either employing this average for comparisons or converting it into an expression based on an average of 100 per month. Comparisons on the latter scale may be readily made as per cents of the average monthly mortality.

Table 11.—Deaths in Michigan, by months and quarters, 1898. (Stillbirths included.)

Year and months.	Number of deaths.		Average number per day.	Rank.	Death rate per 1,000 population.	Death rates as originally printed in <i>Bulletins</i> .	Increase for delayed returns.
	By months.	By quarters.					
Year, 1898.....	29,474	29,474	-----	1,200	12.5	12.5	0.0
January.....	2,385	} 7,478	76.9	95	12.0	12.1	-0.1
February.....	2,336		83.4	103	12.9	12.8	0.1
March.....	2,757		88.9	110	23.8	13.8	0.0
April.....	2,751	} 7,415	91.7	113	14.3	14.3	0.0
May.....	2,545		82.1	102	12.8	12.6	0.2
June.....	2,119		70.6	87	11.0	11.0	0.0
July.....	2,262	} 7,457	73.0	90	11.4	11.3	0.1
August.....	2,510		81.0	100	12.6	12.5	0.1
September.....	2,685		89.5	111	13.9	13.8	0.1
October.....	2,489	} 7,124	80.3	99	12.5	12.3	0.2
November.....	2,258		75.3	93	11.7	11.6	0.1
December.....	2,377		76.7	95	11.9	11.9	0.0
Average.....	2,456	7,369	80.8	100	-----	-----	0.1

Employing these methods we find that March, which had the largest number of deaths, 2,757, has only 88.9 per day or a rank of 110 per cent of the average, while April, with 2,751 deaths, shows 91.7 per day or 113 per cent. Hence April is the month of true maximum mortality of the year. June, with 2,119 deaths returned, not only shows the smallest number of deaths for any month, but the average number per day, 70.6; and the rank, 87 per cent, are also minima.

The same comparative showing may be made by means of the monthly death rates, based on the mean estimated reporting population of the year, which likewise eliminates the inequality of the months. The rates ranged from June, with 11.0 per 1,000, to April, which registered 14.3 per 1,000. The variation from the yearly average, 12.5 per 1,000, is seen to be very small.

MONTHLY RATES BASED ON PROMPT RETURNS.

Of interest in this connection is the comparisons which may be made by means of Table 11 of the monthly rates as computed for the Annual Registration Report, after all delayed returns have been received, and the rates for the same months as originally published in the *Michigan Monthly Bulletin of Vital Statistics* very shortly after the close of each month. It might be expected that some increase would be shown, and in fact there were delayed returns amounting to some 2.7 per cent, as shown in Table 12 (originally published in the *Bulletin* for December, 1899), but nevertheless the death rate for the year as given in this report is identical with that given in the *Bulletin*. The reason for this fact is that all rates, both in the *Bulletin* and in the Annual Report are based upon estimated reporting population, and the population making prompt returns each month is so large, averaging about 99 per cent of the possible reporting population, that additional returns affect the rates very slightly if at all. This is evidence that the rates given in the *Bulletin* each month

may be safely accepted as approximately accurate, so far as later returns are concerned. The average monthly variation in the death rate is only about one-half of one per thousand population.

Table 12.—*Delayed returns of deaths by months, 1898. (Stillbirths included.)*

Deaths returned and published in—	Total deaths, 1898.	Months of death, 1898.											
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Annual Registration Report.....	29,474	2,385	2,336	2,757	2,751	2,545	2,119	2,262	2,510	2,685	2,489	2,258	2,377
Monthly Bulletins.....	28,689	2,288	2,261	2,686	2,689	2,459	2,055	2,217	2,454	2,640	2,414	2,185	2,341
Delayed returns.....	785	97	75	71	62	86	64	45	56	45	75	73	36
Per cent.....	2.7	4.2	3.3	2.6	2.3	3.5	3.1	2.0	2.3	1.7	3.1	3.3	1.5

Table 13.—*Deaths and death rates in Michigan, by sex, 1887-98. (Stillbirths included.)*

Year.	Population.		Number of deaths.		Rates per 1,000.		Deaths of males to 100 deaths of females.	Relative male mortality.†
	Males.	Females.	Males.	Females.	Males.	Females.		
1887.....	1,033,102	940,569	10,563	8,877	10.2	9.4	119.0	108
1888.....	1,052,661	961,082	11,722	10,024	11.1	10.4	116.9	107
1889.....	1,072,221	981,596	10,984	9,297	10.2	9.5	118.1	107
1890*.....	1,091,780	1,002,109	11,801	9,771	10.8	9.8	120.7	110
1891.....	1,108,970	1,021,857	11,908	9,998	10.7	9.8	119.1	109
1892.....	1,126,160	1,041,605	11,837	9,809	10.5	9.4	120.7	112
1893.....	1,143,350	1,061,353	11,772	10,142	10.3	9.6	116.1	107
1894*.....	1,160,540	1,081,101	11,159	9,744	9.6	9.0	114.5	107
1895.....	1,177,730	1,100,849	12,161	10,510	10.3	9.5	115.7	108
1896.....	1,194,920	1,120,597	11,807	10,119	9.9	9.0	116.7	110
1897‡.....	1,212,110	1,140,345	-----	-----	-----	-----	-----	-----
1898.....	1,229,300	1,160,093	15,624	13,809	12.7	11.9	113.1	107
Average, 1887-96.....	1,116,143	1,031,272	11,571	9,829	10.4	9.5	117.7	109

* Census years.

† Ratio of *death rates* (not deaths) of males to death rates of females. This comparison eliminates the unequal distribution of the sexes in the population.

‡ Last year under old registration law not yet compiled.

MORTALITY OF THE SEXES IN MICHIGAN, 1898.

There are usually more deaths of males than of females, but the percentage of the former was somewhat lower for 1898 than usual, being only 13.1 in excess. This surplus is dependent upon a somewhat larger male population, as indicated in Table 13, and also upon an actually higher rate of mortality for males. There were 12.7 deaths of males to every 1,000 males in the estimated male population of the State,

and only 11.9 deaths of females per 1,000 female population. A certain proportion of this comes from the excess of males among the stillbirths included.

A valuable comparison is made by stating the ratio of the male to the female death rate, or the "relative male mortality." This ratio for 1898, 107, is very nearly identical with that derived from previous years of registration of deaths under the old law, thus indicating that such returns, although known to be imperfect so far as completeness is concerned, may yet afford valuable information in certain particulars.

DEATHS BY SEX AND AGE PERIODS.

Not only in the study of the general incidence of deaths, but also in comparing the death rates of the sexes, the age distribution of deaths should be considered in connection with the corresponding age distribution of the population. We may first, in Table 14, consider the general grouping of the deaths returned for the year 1898 by sex and periods of age. We observe that the deaths of males exceed the deaths of females at all of the five-year periods, except during the childbearing ages, 15 to 39 years, and that the excess of deaths of male children under five years of age is very large, being no less than 731. The largest proportion of these deaths of male children occurred during the first year of age, 581, which number, with the excess of males among the stillbirths, would seem to indicate that the chances of death were decidedly greater for male infants. We have no reliable statistics of births by which to test this conclusion by making a comparison of the infant mortality of the sexes, but assuming that the returns of births are defective to about the same extent for both males and females, we may compare the number of deaths of infants during the year 1898 with the reported number of births of corresponding sex for the same year. By referring to Table I, p. 139, we find that the assessors and supervisors returned 22,420 male children and 20,972 female children as having been born in the State during 1898. Based on these numbers, we have the following rates per 1,000 for males and females respectively: Males, stillborn, 32.5 per 1,000 births; under 1 year, 135.5; females, stillborn, 25.6; under 1 year, 117.1. Thus it would seem probable that the chances of life of male infants, after taking into consideration the larger number of male births which always occurs, is in reality somewhat less than that of female infants, and that the difference in viability rapidly diminishes to the third year of life.

The largest percentage of mortality of any of the five-year periods is, of course, supplied by that of the children under five years, from whom about one-fourth of the total number of deaths was derived. This number is exclusive of stillbirths, and if stillbirths be likewise deducted from the total number of deaths, as they should be, the ratio to total deaths of the living would be somewhat increased. The same is true of all of the other percentages of this class. As all previous reports have included stillbirths in the total number of deaths, upon which the percentages were based, it seemed desirable to leave the table in the old form for comparisons with previous years. This could all the more readily be done, as most of the ratios therein given are of very little practical consequence.

Table 14.—Deaths in Michigan, by sex and age periods, 1898. (Stillbirths included.)

Ages in years and periods of years.	Number of deaths, 1898.				Per cent of deaths at each age to total at all ages.			Per cent of deaths of each sex to total of both sexes.†				Excess of the sexes by number.		Males to 100 females.
	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	Males.	Females.	Excess.		Males.	Females.	
										Males.	Fem.			
All ages.....	29,474	15,624	13,809	41	100.0	100.0	100.0	53.1	46.9	6.1	-----	1,815	-----	113
Stillbirths.....	1,300	728	536	36	4.4	4.7	3.9	57.6	42.4	14.8	-----	192	-----	136
Under 1 year*.....	5,496	3,037	2,456	3	18.6	19.4	17.8	55.3	44.7	10.6	-----	581	-----	124
1 year.....	1,065	584	481	----	3.6	3.7	3.5	54.8	45.2	9.6	-----	103	-----	121
2 years.....	452	245	207	----	1.5	1.6	1.5	51.2	48.8	8.4	-----	38	-----	118
3 years.....	317	159	158	----	1.1	1.0	1.1	50.2	49.8	0.4	-----	1	-----	101
4 years.....	218	113	105	----	0.7	0.7	0.8	51.8	48.2	3.6	-----	8	-----	108
Under 5 years*.....	7,548	4,138	3,407	3	25.6	26.5	24.7	54.8	45.2	9.7	-----	731	-----	121
5 to 9.....	733	387	346	----	2.5	2.5	2.5	52.8	47.2	5.6	-----	41	-----	112
10 to 14.....	552	293	259	----	1.9	1.9	1.9	53.1	46.9	6.2	-----	34	-----	113
15 to 19.....	916	437	479	----	3.1	2.8	3.5	47.7	52.3	-----	4.6	-----	42	91
20 to 24.....	1,203	582	621	----	4.1	3.7	4.5	48.4	51.6	-----	3.2	-----	39	94
25 to 29.....	1,089	508	581	----	3.7	3.3	4.2	46.6	53.4	-----	6.8	-----	73	87
30 to 34.....	972	419	553	----	3.3	2.7	4.0	43.1	56.9	-----	13.8	-----	34	76
35 to 39.....	1,062	508	554	----	3.6	3.3	4.0	47.8	52.2	-----	4.4	-----	46	92
40 to 44.....	1,030	530	500	----	3.5	3.4	3.6	51.5	48.5	3.0	-----	30	-----	106
45 to 49.....	973	535	438	----	3.3	3.4	3.2	55.0	45.0	10.0	-----	97	-----	122
50 to 54.....	1,170	621	549	----	4.0	4.0	4.0	53.1	46.9	6.2	-----	72	-----	113
55 to 59.....	1,317	705	612	----	4.5	4.5	4.4	53.5	46.5	7.0	-----	93	-----	115
60 to 64.....	1,475	780	695	----	5.0	5.0	5.0	52.9	47.1	5.8	-----	85	-----	112
65 to 69.....	1,832	1,016	816	----	6.2	6.5	5.9	55.5	44.5	11.0	-----	200	-----	125
70 to 74.....	1,987	1,086	901	----	6.7	7.0	6.5	54.7	45.3	9.4	-----	185	-----	121
75 to 79.....	1,874	1,056	818	----	6.4	6.8	5.9	56.4	43.6	12.8	-----	238	-----	129
80 and over.....	2,394	1,262	1,132	----	8.1	8.1	8.2	52.7	47.3	5.4	-----	130	-----	111
Unknown ages.....	47	33	12	2	0.2	0.2	0.1	73.3	26.7	44.7	-----	21	-----	275

* Excluding stillbirths.
 † Unknown sex excluded.

DEATH RATES BY SEX AND AGE PERIODS.

Some of the obvious objections to the ratios presented in Table 14, considered as a means of studying the relative mortality of the sexes at different periods of age, are removed when the data are presented in the form shown in Table 15. Other objections, however, chiefly arising from the imperfections of the census at certain ages, the possibly greater inaccuracies in the returns of deaths at the same ages, and the general difficulties of making a satisfactory estimation of population, by age

periods and sex, after the lapse of several years from the census, still remain, and must be considered in connection with any conclusions derived from Table 15.

In this table an attempt has been made to ascertain what the population of the State would be in 1898 as distributed among the several periods of age, and also divided among the sexes. It is assumed that the same amount of increase that obtained from 1890 to 1894 also held good from 1894 to 1898, and although there are doubtless considerable variations from the figures so obtained in the actual constitution of the population for that year, we have no other means of comparing the deaths with the constituent populations from which they were derived. Whatever conclusions may be drawn from an examination of these figures may be finally corroborated or disproved by a comparison with the corresponding ratios for the year 1900 based directly upon census returns. It is believed, however, that the results obtained in Table 15 may be accepted as fairly close approximations to the truth. Stillbirths are entirely excluded from this table, thus removing one important source of discrepancy between the rates of male and female mortality.

In this table we note that the highest mortality pertains to the extremes of life, namely under one year and over 75 years. The second year of life also possesses a high death rate, but from this point the mortality rapidly declines with each successive period until the age of 10 to 14 years, which appears to be the least liable to death. After the age of 15 years the general mortality slowly rises until, after passing the mid-century mark, the annual death rate shows a much more rapid increase.

In this table, as in Table 13, the relative male mortality is shown for all ages, and in addition the ratios for each age period are exhibited. The death rate of males exceeds that of females by six per cent for all ages, or one per cent less than the percentage given in Table 13, which included stillbirths. The ratio of male mortality is greatest for infants under one year of age, and is usually in excess of 100 per cent, except for the ages during which females are exposed to the added risk of child-bearing, namely, 15 to 44 years. For these ages the female death rate is the greater and especially for the period 30 to 34 years.

DEATH RATES AND PROPORTIONAL DEATHS BY AGE PERIODS, 1870-98.

In Table 16 death rates and proportional deaths are given for certain important age periods, without distinction of sex, for the past thirty years. As all of the years with the exception of 1898 are under the old registration law, no comparison of the absolute death rates of the year with previous years can be made, except within certain approximate limits. It has already been pointed out that the year 1898 is an exceptionally favorable one. The slight increase of the death rate for all ages, exclusive of stillbirths, 11.8 per 1,000 population, over the average of the preceding years would indicate a corresponding slight increase at the individual age periods. This we find to be true, noting a rise of about 10 per 1,000 for infants under one year of age; a decline for children under 5 years and for children aged 5 to 14 years, inclusive; a slight rise for adults at the active period of life, 15 to 64 years; and a marked increase in the mortality of persons aged 65 years and over. The high

Table 15.—Deaths and death rates in Michigan, by age periods and sex, 1898. (Stillbirths excluded.)

Ages.	Estimated population, 1898.			Deaths, 1898.				Death rates per 1,000 population of same age and sex, 1898.			Relative male mortality.*
	Total.	Males.	Females.	Total.	Males.	Females.	Unknown.	Total.	Males.	Females.	
All ages.....	2,389,393	1,229,299	1,160,094	28,174	14,896	13,273	5	11.8	12.1	11.4	106
Under 1 year.....	62,119	31,578	30,541	5,496	3,037	2,456	3	88.5	96.2	80.4	120
1 year.....	61,256	31,384	29,872	1,065	584	481	—	17.4	18.6	16.1	116
2 years.....	55,425	28,702	26,723	452	245	207	—	8.2	8.5	7.7	110
3 years.....	54,700	27,603	27,097	317	159	158	—	5.8	5.8	5.8	100
4 years.....	56,914	29,439	27,475	218	113	105	—	3.8	3.8	3.8	100
Under 5 years.....	290,414	148,706	141,708	7,548	4,138	3,407	3	26.0	27.8	24.0	116
5 to 9 years.....	260,344	131,554	128,790	733	387	346	—	2.8	2.9	2.7	107
10 to 14 years.....	238,936	121,244	117,692	552	293	259	—	2.3	2.4	2.2	109
15 to 19 years.....	236,088	118,137	117,951	916	437	479	—	3.9	3.7	4.1	90
20 to 24 years.....	214,450	105,575	108,875	1,303	582	621	—	5.6	5.5	5.7	97
25 to 29 years.....	195,603	98,169	97,434	1,089	508	581	—	5.6	5.2	6.0	87
30 to 34 years.....	176,315	91,266	85,049	972	419	553	—	5.5	4.6	6.5	71
35 to 39 years.....	170,507	90,140	80,367	1,062	508	554	—	6.2	5.6	6.9	81
40 to 44 years.....	136,075	73,678	62,397	1,030	530	500	—	7.6	7.2	8.0	90
45 to 49 years.....	115,383	62,382	53,001	973	535	438	—	8.4	8.6	8.3	104
50 to 54 years.....	106,113	55,831	50,282	1,170	621	549	—	11.0	11.1	10.9	102
55 to 59 years.....	74,330	38,643	35,687	1,317	705	612	—	17.7	18.2	17.1	106
60 to 64 years.....	65,585	35,212	30,373	1,475	780	695	—	22.5	22.2	22.9	97
65 to 69 years.....	45,491	24,233	21,258	1,832	1,016	816	—	40.3	41.9	38.4	109
70 to 74 years.....	32,607	17,986	14,621	1,987	1,086	901	—	60.9	60.4	61.6	98
75 to 79 years.....	18,989	10,205	8,784	1,874	1,056	818	—	98.7	103.5	93.1	111
80 years and over.....	12,163	6,338	5,825	2,394	1,262	1,132	—	196.8	199.1	194.3	102
Unknown.....	—	—	—	47	33	12	2	—	—	—	—

* Ratio of death rates of males to death rates of females.

death rate of elderly persons would seem to be the especial characteristic of the mortality of Michigan for several years past.

The objections to the comparison of the data of 1898 with the statistics of previous years do not hold when the proportions of deaths at given periods to deaths at all ages are stated. We accordingly find that the ratios for 1898 bear a close relation to the corresponding data for the years immediately preceding. In this comparison, the increased percentage of deaths of elderly persons is again very noticeable.

The last column in this table is given more for its theoretical value as a criterion of the sanitary condition of a community relative to the dis-

DEATHS.

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Table 16.—*Death rates and ratios of deaths at certain periods of age, 1870-98. (Stillbirths excluded from both births and deaths.)*

Years and periods.	Death rates per 1,000 population of corresponding age.						Percentages of deaths at each age to total deaths at all ages.					Deaths of infants under 1 year of age per 1,000 living births.
	All ages.	Under 1 year.	Under 5 years.	5 to 14.	15 to 64.	65 and over.	Under 1 year.	Under 5 years.	5 to 14.	15 to 64.	65 and over.	
1870.....	8.9	74.4	26.5	3.5	5.4	37.0	23.5	42.1	9.6	36.6	11.6	91.3
1871.....	7.7	58.3	21.2	2.9	4.8	36.9	21.2	38.7	9.3	38.1	14.0	75.6
1872.....	10.3	88.7	30.9	4.0	6.3	38.1	23.9	41.6	9.3	37.2	11.9	110.9
1873.....	10.6	92.4	31.7	4.4	6.5	41.2	23.9	40.9	9.9	37.2	12.0	96.0
1874.....	8.8	79.5	25.7	3.0	5.6	38.0	24.6	39.6	8.1	38.7	13.7	94.8
1875.....	8.1	71.2	23.3	2.6	5.1	34.6	24.2	39.1	7.8	39.1	14.0	85.5
1876.....	8.2	72.0	23.5	3.0	5.0	37.9	23.7	38.3	8.5	37.8	15.4	82.8
1877.....	8.1	66.9	23.0	3.2	5.0	37.1	22.1	37.5	9.2	37.8	15.4	81.1
1878.....	7.7	59.7	21.2	3.4	4.6	36.0	20.6	35.8	10.0	38.0	16.0	70.5
1879.....	8.6	67.5	24.3	4.3	5.0	38.5	20.8	36.7	11.7	38.0	15.7	84.1
1880.....	9.4	75.7	27.4	4.6	5.4	39.9	21.5	37.9	11.3	35.7	15.2	93.5
1881.....	11.0	91.7	33.8	6.1	6.1	41.3	21.7	39.0	12.6	34.7	13.7	116.4
1882.....	9.0	73.3	25.1	4.7	5.3	36.8	20.9	36.3	11.9	36.3	15.4	88.7
1883.....	9.0	74.5	25.8	3.8	5.5	37.7	21.1	35.5	9.7	38.5	16.3	83.0
1884.....	9.4	88.5	28.7	3.8	5.5	39.2	23.7	37.4	9.2	36.9	16.5	101.2
1885.....	8.4	72.9	23.6	3.2	5.2	37.6	21.6	34.1	8.6	39.1	18.2	81.2
1886.....	9.0	83.2	27.2	3.3	5.4	38.7	22.8	36.4	8.3	37.5	17.9	96.1
1887.....	9.5	85.1	28.4	3.4	5.7	41.4	22.1	35.5	8.1	37.9	18.5	(97.2) 89.3
1888.....	10.2	97.0	30.8	3.3	6.2	44.9	23.0	35.4	7.2	38.3	19.1	(103.4) 97.2
1889.....	9.3	84.5	27.6	3.2	5.8	40.4	21.7	34.3	7.6	39.1	19.1	(91.1) 84.9
1890.....	9.7	84.0	27.2	3.8	6.1	41.9	20.6	32.4	8.6	39.7	19.4	(89.7) 80.8
1891.....	9.9	86.3	26.9	3.3	6.1	46.0	21.3	32.0	7.5	39.3	21.2	(93.7) 87.8
1892.....	9.6	78.3	25.1	3.2	5.9	47.0	20.2	31.0	7.4	39.3	22.4	90.5
1893.....	9.5	80.8	25.0	3.1	5.9	46.8	21.1	31.1	7.2	39.1	22.4	93.2
1894.....	8.9	75.3	22.8	2.6	5.7	43.5	21.2	30.6	6.4	40.8	22.3	95.9
1895.....	9.5	78.0	23.2	2.5	6.2	50.9	20.6	29.1	5.7	41.0	24.2	97.9
1896.....	9.0	69.6	21.8	2.6	5.7	46.2	20.0	29.5	6.3	40.4	23.7	91.0
1897.....												
1898.....	11.8	88.6	26.0	2.6	7.5	74.0	19.6	26.8	4.6	39.8	28.8	
1870-74.....	9.3	78.7	27.2	3.6	5.7	38.2	23.4	40.6	9.2	37.6	12.6	93.7
1875-79.....	8.1	67.5	23.1	3.3	4.9	36.8	22.3	37.5	9.4	37.7	15.3	80.8
1880-84.....	9.6	80.7	28.4	4.6	5.6	39.0	21.8	37.2	10.9	36.4	15.4	96.6
1885-89.....	9.3	84.7	27.5	3.3	5.7	40.6	22.2	35.1	8.0	38.4	18.6	(93.8) 89.7
1890-94.....	9.5	80.9	25.4	3.2	5.9	46.0	20.9	31.4	7.4	39.6	21.5	(92.6) 89.6
1870-94.....	9.2	78.5	26.3	3.6	5.6	39.9	22.1	36.4	9.0	37.9	16.7	(91.5) 90.1

NOTE.—The numbers in parentheses in the last column represent the figures for infant mortality after correction, as far as possible, for fraudulent returns of births and deaths from Wayne county (Detroit) during the years 1887-91. See Report for 1892, p. 14. The data for 1897, the last year under the old and tardy law for the registration of deaths, have not yet been compiled. No comparison can be made of the deaths returned under the new law for 1898 with the very imperfect returns of births.

eases affecting infant life when based on reliable statistics of births and deaths, than from its actual value as derived from the statistics of Michigan. No ratio derived from vital statistics is of more immediate practical usefulness in determining the urgency of sanitary work than the so-called "infant mortality," which is the ratio of deaths of infants under one year of age to the number of children born (not to the population under one year). As already explained, the enumeration of births in Michigan is so imperfect as to be practically worthless for reliable statistical deductions, and the returns of deaths were even more unreliable

until the new law took effect. While, therefore, the figures given for infant mortality in Table 16 are not comparable with reliable data, some use may possibly be made of them under the assumption that for years not vitiated by actual fraud in the returns, the fluctuations of the rates may indicate variations in actual conditions.

It is interesting to compare the rates given for the year 1898 according to the various age periods with the rates for the corresponding periods in 1896 and also in the quinquennial periods under the old law. The death rate for infants under one year of age, as compared with the estimated population of that age, is not very markedly higher than the rate for preceding years. In fact it is exceeded by several years, namely, 1872, 1873, 1881, 1884 and 1888. These years were very unfavorable years, owing to the unusual prevalence of infectious diseases, and the fact that 1898, which was probably an extremely salubrious year, stands next to these years in the height of the infant death rate simply means that the registration of deaths has improved in accuracy so that in a very favorable year nearly as many deaths of this class are reported as in the most fatal of former years under imperfect registration.

This is even more forcibly shown by comparing the death rates under five years of age, since favorable sanitary conditions, and especially the prevention of the infectious diseases of children, will be chiefly indicated by a lessened mortality of this age period. There are many deaths of infants, mainly from diarrheal diseases, which present sanitary methods do not satisfactorily prevent, hence the improvement would be more clearly shown if the children over one year of age were only considered. With all ages under five years included, however, the death rate for the year 1898 (26.0 per 1,000) was lower than that given for many years of registration under the old law, and, indeed, lower than the twenty-five year average (26.3 per 1,000).

The great excess of the death rates of the aged for 1898 over previous years can hardly be due to greater accuracy of registration of this special class of deaths. A general tendency suggested in the steady increase in the death rates of the aged according to the old statistics, and a continuation of the causes responsible for this increase, with greater accuracy of registration for all classes of deaths, would bring about the rise.

DEATHS BY GEOGRAPHICAL SECTIONS, 1898.

We come now to a very important part of the study of the occurrence of deaths in Michigan, namely, their geographical distribution over the State. It is very necessary for this purpose that death rates be computed with reference to the age distribution of the population, and as this presents considerable difficulty for a postcensal year considerably removed from the date of the last census, no attempt will be made to discuss the subject as thoroughly as it will be possible to do after the results of the United States census of 1900 are available. Some general idea may be given, however, of the prevalence of mortality from all causes and in the succeeding section of this report, the distribution of individual causes of death will be considered to some extent.

The number of deaths from all causes, together with the annual death rate per 1,000 estimated population, may be found in Table 9, p. xlii, with which figures the map showing the density of population of the counties of Michigan (p. xli) should be employed. As shown by the analysis of the vital rates of two typical counties (p. xliii), the density of population is to some degree a guide as to other important conditions affecting the vital rates, and especially the age distribution.

The geographical sections employed are the same as those used by the United States Weather Bureau, thus facilitating comparisons with meteorological data. They are shown in Map I, p. xli, and Table 8, p. xl, gives the density of population of each section as well as of the constituent counties. The average density of population of the State in 1894 was 39.5 persons per square mile. The Upper Peninsula was the most sparsely settled, its density, 12.6 per square mile, being about one-third as great as the average density for the State. The northern counties of the Lower Peninsula were about one-half as densely settled as the average, and the southern counties were about twice as thickly settled. A regular gradation in increase of density of population may thus be noted in passing from the northern to the southern portion of the State, and a corresponding increase of mortality may be observed in certain classes of diseases.

It was shown in Table 12, p. lii, that the returns of deaths made by the registrars with the promptness required by law and published in the *Michigan Monthly Bulletin of Vital Statistics* before the middle of the following month were very nearly complete for the year 1898, being increased by only 2.7 per cent from the reception of delayed returns. Moreover, in Table 11, it was shown that the death rates given in the *Bulletin*, being computed in each case for the population actually represented by the returns, were practically the same as those computed after the reception of the delayed returns. This showing is that for the first complete calendar year of registration, the early months of which were very near to the date of establishment of the system. There has been a progressive improvement in the accuracy and promptness of registrars, and we may feel assured that the correspondence of the original monthly compilations with the annual one will be practically identical in important respects, so far as the rates are concerned. Hence for the study of geographical distribution, the original tables of mortality, by geographical sections and by cities, have simply been reprinted as Table 17 of this report. Upon this table the following discussion and Diagram V, showing the distribution of mortality by geographical sections and as urban and rural, and also the percentages of deaths of children under five years of age in these divisions of the State, have been based.

The fact that this table also displays the mortality from certain important individual causes of death need not be considered at this place, as it will be referred to under the discussion of causes of death in the Section following. It may be useful, however, to note at this point that the classification employed is that used in the Michigan reports before January 1, 1898, having been begun in the *Bulletin* before the adoption of the Bertillon classification used elsewhere in this report, and hence that some differences occur which will be explained in the following part of the report.

Diagram V shows the death rates of the four geographical sections of the State and also of the cities and country for each of the months of the year 1898 exactly as returned, compiled and promptly published in the *Michigan Monthly Bulletin of Vital Statistics*. In addition to the death rates, the percentages of deaths under five years to deaths at all ages, both exclusive of stillbirths, are shown, the numbers being obtained by the addition of the per cents of deaths of infants under one year of age and of deaths of children aged from one to four years, both inclusive, as given in Table 17. In both sets of curves the State is represented by the heavy line, while the geographical sections are shown by broken lines, the number of dots representing the number of the section as: — . —, Section I, Upper Peninsula; — . . —, Section II, Northern counties of the Lower Peninsula; — . . . —, Section III, Central counties; — —, Section IV, Southern counties. The cities are shown by a light unbroken line, —————, while the rural population is represented by a dotted line

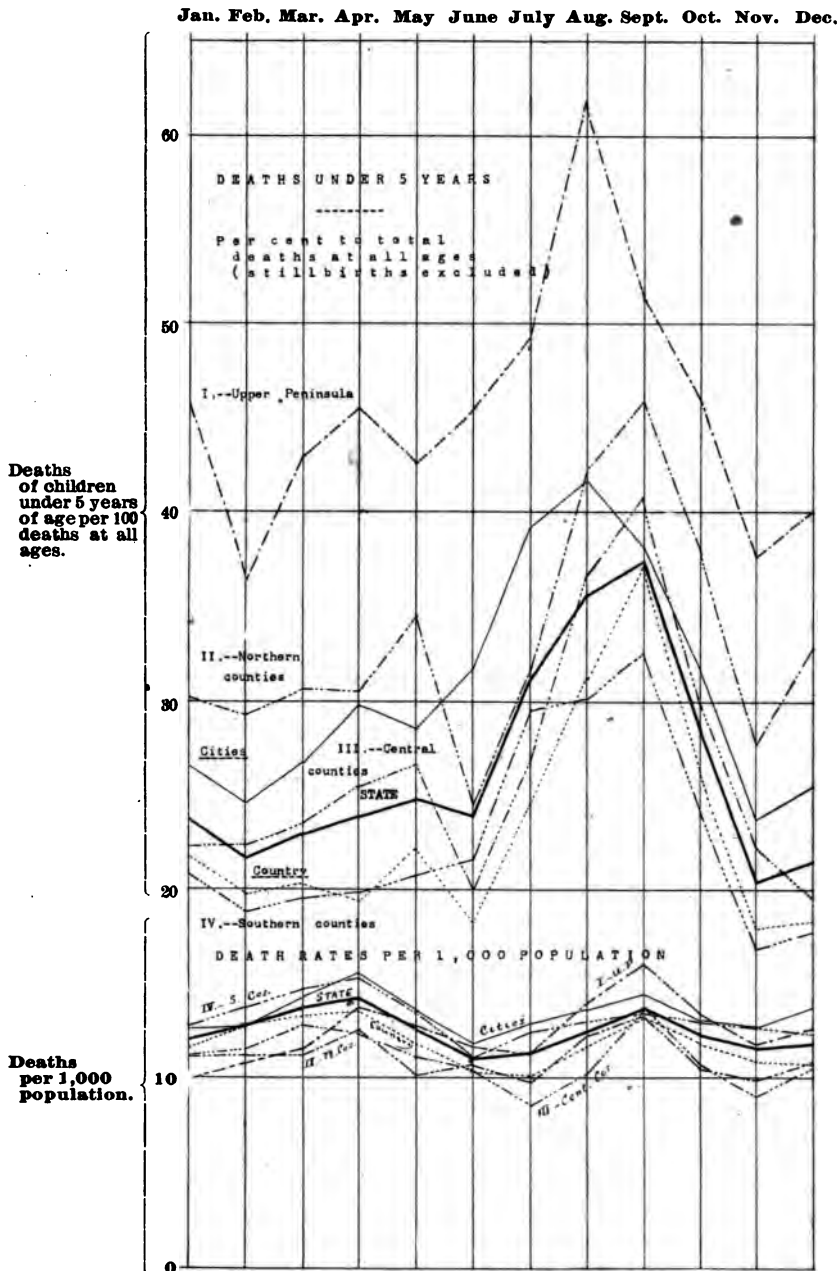
Taking the death rates represented in the lower portion of the diagram, we note in a general way that they all fluctuate together through the year. That is to say, starting in January with a variation of three points, the rates covering a band of mortality ranging from 10 to 13 per 1,000, this band swings upward until April, when the rates range from 12.5 to 15.5 per 1,000, downward from this point to June, where the band is contracted, showing a close agreement in the death rate for all parts of the State, upward again, with some scattering, for July, and thence to a maximum in September, when the rates range from 13 to 16 per 1,000, then down to November, with a slight final rise for the last month of the year.

Compared with the heavy line representing the average mortality of the State, we note that the Southern section (IV) is above the average for every month of the year with the exception of September. For June, however, it exceeds the average by only 0.1 per 1,000. Such a comparison is by no means fair to this section since the age distribution of the population and other factors of a high mortality are much less favorable than in the newly-settled parts of the State.

For the early months of the year the mortality of the Upper Peninsula is below the average, but in May it passes the mean and remains higher throughout the year with the exception of July, when the rates are equal. In September it rises to the maximum, showing a higher death rate (16.0 per 1,000) than that shown by any other section or by the cities. It may be noted that the urban mortality comes next to that of the Upper Peninsula for September, the other sections and the country showing an increased rate in smaller degree, while at the time of the Spring maximum in April (cities highest), the Upper Peninsula was below the mean.

The urban mortality, or the death rate of all of the cities of the State taken together, is higher for every month of the year than the rural mortality, the least difference being for the month of February (0.1 per 1,000). The greatest differences are for the months of July and December, and would seem to indicate that the coming of extreme temperatures, either of heat or cold, finds greater vulnerability among the city than the country population. Here again, however, differences in age distribution may need to be taken into consideration.

DIAGRAM V.—DEATH RATES AND PER CENTS OF DEATHS UNDER FIVE YEARS FOR THE STATE, GEOGRAPHICAL SECTIONS AND CITY AND COUNTRY, BY MONTHS, 1898.



NOTE.—This diagram is based entirely on the prompt returns published in the *Michigan Monthly Bulletin of Vital Statistics*, and collated in Table 17. See descriptive text, with explanation of curves, on opposite page.

Passing from the study of the death rates to the percentages shown in the upper portion of the diagram, it should be stated at the outset that the use of ratios based upon the total number of deaths is not as satisfactory a means of comparisons as the death rates would be computed upon the population of each section under five years of age. But the difficulties in the way of making a satisfactory estimate of this population for 1898, four years since the last census, are so great that it seemed inadvisable to attempt it. It is far more difficult than to attempt an estimate of the general population, from the smaller numbers involved, the greater imperfections of the census, and the very striking differences in the natural increase in various portions of the State. Hence a mere statement of ratios to total population is submitted, more as a suggestion than as a final exposition of the relations involved, until the direct comparison of the deaths of 1900 with the census of the same year shall again assist us to a more definite knowledge of this very important subject. What has been said relative to mortality under five years applies with even greater force to the mortality under one year, since the census is even more imperfect for this age and the registration of the births in this State, a basis universally accepted for the computation of "infantile mortality," is so imperfect as to be practically wanting.

In spite of the difficulty attending the statistical study of the mortality of children, it is a subject of such vast practical sanitary importance that it must needs be considered in some manner. As shown by the diagram, for the State as a whole not less than 21 and sometimes over 47 per cent of the monthly deaths are those of children under five years of age,—who have no right to die, and whose deaths, for the most part, are due to clearly preventable causes. In the Southern section, which has the smallest child population of any of the State and the largest proportion of elderly people, whose deaths depress the ratio of child deaths, from one-sixth to one-third of all of the deaths are those of children under five years of age. It is evident at a glance how important the prevention of infant and child mortality must be in the general reduction of the death rate, and how great a proportion of sanitary effort should be directed to this portion of public health work. It is a field presenting unusual difficulties, owing to the necessity of instructing the parents and those having the care of young children in their management, especially during the warmer months of the year. Study of the causes of death in the following section will show that the diseases usually coming under public health restriction for the early ages are not those that cause the greatest mortality of children. The prevalence of diphtheria, scarlet fever, measles, whooping cough, smallpox, typhoid fever and cerebro-spinal meningitis is less important as a cause of death than the diarrheal diseases, such as "cholera infantum," which usually receive comparatively little attention. It is probable that the health service must endeavor to restrict the prevalence of such diseases by indirect means, including especially the education of parents and physicians in regard to their great importance, rather than by the ordinary methods employed for diseases now restricted.

In the variations of the per cents of deaths of children under five years to total deaths (indicated by the same lines for the several sections as are the death rates), we note a general correspondence with the death rates at all ages. This might be expected from the very large

proportion which such deaths bear to the total mortality, ranging from about 20 to 60 per cent. The same general variation in the sections may be noted as with the rates. Starting with a little over 20 per cent for the Southern counties (IV) and 45 per cent for the Upper Peninsula (I), the other sections being intermediate in the order of their numbers from north to south, a general decline is seen for February, then a rise to a general maximum in May, although the curves of the Upper Peninsula and of the cities culminate (for the Spring maximum) a month earlier. Some decline is generally noted in June (in May for the Upper Peninsula and the cities), and then the rates for all sections start on a rapid climb with the increase of heat and the concomitant increase of diarrheal diseases of children. The maxima for the Upper Peninsula and the cities are again together in August, the State and all of the other sections coming a month later in September. The proportion of deaths of children in the Upper Peninsula in August is nearly two-thirds of the total mortality, while it greatly exceeds other sections in all of the months. Of course the partial explanation of this is the fact that there are more children in the population in the Upper Peninsula, but it is likely that this section would actually show a higher infant and child mortality. From September (or August) all of the sections decline to November, which is the most favorable month of the year, and then, with but a single exception, the rates rise to December, when they are in precisely the same order, but somewhat lower, than at the beginning of the year.

The rates for subsequent months may be found in the monthly issues of the *Bulletin of Vital Statistics* published during 1899 and 1900, and the rates for various important causes of death may be traced in a similar manner. This diagram is prepared as much to call attention to the prompt and reliable information at hand a very short time after the close of each month in regard to the general occurrence of mortality in Michigan as well as to the progress of various important diseases, as to illustrate the vital statistics of the year. In fact, by means of the *Monthly Bulletins* of the Indiana State Board of Health, containing similar matter to that given in Table 17 for the State of Indiana, and arranged by the geographical sections employed by the Weather Bureau for that State, the progress of diseases can now be followed monthly, through seven consecutive geographical sections, extending from Lake Superior on the north to the Ohio river on the south, and containing about 5,000,000 inhabitants. To follow such data month by month shortly after the events occur is of much greater practical service to sanitarians than an annual report, however elaborate, appearing some time afterwards.

It may be noted that the per cents under five years of age to total deaths are not stated directly in Table 17, but are obtained by the addition of the per cents for infants under one year of age and children aged from one to four years, both inclusive, these two periods taken together constituting the period under five years of age. Perhaps an even more important comparison could be made of the infant mortality of the sections, as distinguished from the combined mortality of infants and young children shown in the diagram, but the study here given is sufficient to point out the sanitary interests of these statistics, which, considering the extensive area from which they are derived, are collected and published the most promptly of any mortality statistics in the United States.

Table 17.—Mortality of Michigan, by geographical sections and groups of cities, as

Population by geographical sections and as urban and rural.	Report- ing popu- lation.	Total deaths.	Death rates per 1,000.	Still- births.	Deaths under 5 years.				Deaths and annual			
					Under 1.		1 to 4.		Consump- tion.		Typhoid fever.	
					Num- ber.	Per cent.	Num- ber.	Per cent.	Num- ber.	Rate.	Num- ber.	Rate.
JANUARY, 1898.....	2,100,228	2,288	12.1	119	361	16.6	156	7.2	209	110.2	25	13.2
I.—UPPER PENINSULA.....	181,175	171	9.9	18	50	32.7	20	13.1	10	57.7	—	—
II.—NORTHERN CO'S.....	217,200	228	11.1	13	44	20.5	21	9.8	18	87.8	2	9.8
III.—CENTRAL CO'S.....	404,053	397	11.2	19	55	14.6	29	7.7	39	109.8	4	11.3
IV.—SOUTHERN CO'S.....	1,297,200	1,492	12.8	69	212	14.9	86	6.0	142	122.1	19	16.3
ALL CITIES.....	839,936	1,000	12.7	73	165	17.8	82	8.8	102	129.2	12	15.2
Over 50,000.....	317,236	417	13.4	44	79	21.2	35	9.4	43	137.8	5	16.0
25,000 to 50,000.....	74,685	72	11.3	6	10	15.2	4	6.1	9	141.2	—	—
10,000 to 25,000.....	197,039	224	12.5	10	30	14.0	17	7.9	27	150.3	4	22.3
5,000 to 10,000.....	148,839	178	12.7	9	31	18.3	20	11.8	15	106.8	1	7.1
Under 5,000.....	102,137	109	11.7	4	15	14.3	6	5.7	8	85.6	2	21.4
COUNTRY.....	1,260,292	1,288	11.6	46	196	15.8	74	6.0	107	96.7	13	11.7
FEBRUARY, 1898.....	2,150,893	2,261	12.8	82	334	15.3	139	6.4	229	130.0	32	18.2
I.—UPPER PENINSULA.....	180,868	168	10.7	11	44	28.0	13	8.3	20	127.7	3	19.2
II.—NORTHERN CO'S.....	221,515	213	11.2	9	41	20.1	19	9.3	18	94.9	2	10.5
III.—CENTRAL CO'S.....	424,055	389	11.5	17	56	15.1	27	7.3	36	106.4	7	20.7
IV.—SOUTHERN CO'S.....	1,324,455	1,491	13.8	45	193	13.3	80	5.5	155	143.9	20	18.6
ALL CITIES.....	839,936	926	12.9	53	161	18.4	54	6.2	109	152.1	15	20.9
Over 50,000.....	317,236	365	12.9	25	64	18.8	32	9.4	41	144.7	5	17.6
25,000 to 50,000.....	74,685	71	12.3	7	14	21.9	2	3.1	9	155.6	2	34.6
10,000 to 25,000.....	197,039	219	13.4	10	35	16.7	7	3.3	26	159.5	4	24.5
5,000 to 10,000.....	148,839	162	12.7	10	33	21.7	6	3.9	23	180.5	1	7.8
Under 5,000.....	102,137	109	12.9	1	15	13.9	7	6.5	10	117.9	3	35.4
COUNTRY.....	1,310,957	1,335	12.8	29	173	13.2	85	6.5	120	114.8	17	16.3
MARCH, 1898.....	2,155,421	2,686	13.8	127	398	15.6	189	7.4	233	119.7	23	11.8
I.—UPPER PENINSULA.....	182,164	202	11.6	18	53	28.8	26	14.1	18	103.6	3	17.3
II.—NORTHERN CO'S.....	224,855	244	11.5	16	53	23.2	17	7.5	19	89.5	1	4.7
III.—CENTRAL CO'S.....	422,255	477	12.9	19	74	16.2	34	7.4	46	123.9	4	10.8
IV.—SOUTHERN CO'S.....	1,326,147	1,763	14.8	74	218	12.9	112	6.6	150	126.3	15	12.6
ALL CITIES.....	839,936	1,134	14.4	92	197	18.9	81	7.8	115	145.7	9	11.4
Over 50,000.....	317,236	486	15.6	49	95	21.7	41	9.4	48	153.8	4	12.8
25,000 to 50,000.....	74,685	77	12.1	9	17	25.0	2	2.9	6	94.1	—	—
10,000 to 25,000.....	197,039	254	14.1	13	31	12.9	16	6.6	29	161.5	1	5.6
5,000 to 10,000.....	148,839	198	14.1	15	43	23.5	14	7.7	20	142.4	1	7.1
Under 5,000.....	102,137	119	12.7	6	11	9.7	8	7.1	12	128.5	3	32.1
COUNTRY.....	1,315,485	1,552	13.4	35	201	13.2	108	7.1	118	101.9	14	12.1
APRIL 1898.....	2,151,425	2,689	14.3	102	438	16.9	181	7.0	235	125.0	26	13.8
I.—UPPER PENINSULA.....	180,814	230	13.8	10	65	29.5	35	15.9	17	101.9	2	12.0
II.—NORTHERN CO'S.....	222,248	257	12.7	12	52	21.2	23	9.4	26	128.2	1	4.9
III.—CENTRAL CO'S.....	418,018	439	12.4	15	75	17.7	33	7.8	39	109.7	6	16.9
IV.—SOUTHERN CO'S.....	1,330,345	1,763	15.3	65	246	14.5	90	5.3	153	132.8	17	14.8
ALL CITIES.....	839,936	1,186	15.5	68	239	21.4	95	8.5	97	127.1	10	13.1
Over 50,000.....	317,236	536	17.8	44	120	24.4	39	7.9	33	109.3	3	9.9
25,000 to 50,000.....	74,685	71	11.5	2	17	24.6	8	11.6	6	97.3	—	—
10,000 to 25,000.....	197,039	257	14.8	13	41	16.8	11	4.5	33	190.0	3	17.3
5,000 to 10,000.....	148,839	217	16.0	8	47	22.5	28	13.4	18	132.5	2	14.7
Under 5,000.....	102,137	105	11.6	1	14	13.5	9	8.7	7	77.5	2	22.1
COUNTRY.....	1,311,489	1,503	13.5	34	199	13.5	86	5.9	138	123.6	16	14.3

DEATHS.

lxv

originally published in the Michigan Monthly Bulletin of Vital Statistics, 1898.

death rates per 100,000 population from important diseases.

Scarlet fever.		Diphtheria.		Group.		Measles.		Whooping cough.		Pneumonia.		Diarrheal diseases under 5 yrs.		Cerebro-spinal meningitis.		Influenza.	
Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.	Num-ber.	Rate.
12	6.3	33	17.4	18	9.5	8	4.2	11	5.8	291	153.5	32	16.9	29	15.3	41	21.6
5	24.4	4	23.1	3	17.3	1	5.8	2	9.8	19	109.7	3	17.3	2	11.5	1	5.8
7	6.0	6	29.3	6	16.9	2	9.8	2	9.8	34	165.8	4	19.5	2	9.8	4	19.5
		17	14.6	9	7.7	3	2.6	7	6.0	45	126.7	5	14.1	9	25.3	6	16.9
										193	166.0	20	17.2	16	13.8	30	25.8
7	8.9	18	22.8	8	10.1	3	3.8	6	7.6	118	149.5	18	22.8	6	7.6	12	15.2
2	6.4	11	35.2	3	9.6	1	15.7	1	3.2	47	150.6	8	25.6	5	16.0	5	16.0
		5	27.8	2	11.1					11	172.6	1	15.7			1	15.7
5	35.6	2	14.2	1	7.1			4	28.5	34	189.3	5	27.8	1	5.6	2	11.1
5	4.5	15	13.6	10	9.0	5	4.5	5	4.5	13	92.6	3	21.4			2	14.2
										13	139.2	1	10.7			2	21.4
										173	156.3	14	12.6	23	20.8	29	26.2
11	6.2	28	15.9	12	6.8	10	5.7	12	6.8	288	163.5	30	17.0	22	12.5	71	40.3
1	6.4	3	19.2					2	12.8	19	121.3	7	44.7			1	6.4
5	26.3	2	10.5	2	10.5			1	5.3	27	142.3			2	10.5	7	36.9
		9	26.6	1	3.0	5	14.8			52	153.7	5	14.8	5	14.8	13	38.4
5	4.6	14	13.0	9	8.4	5	4.6	9	8.4	190	176.5	18	16.7	15	13.9	50	46.4
2	2.8	13	18.1	6	8.4	2	2.8	6	8.4	114	159.1	16	22.3	9	12.6	20	27.9
1	3.5	9	31.8	5	17.6	1	3.5	4	14.1	43	151.8	8	28.2	5	17.6	6	21.2
		1	17.3			1	17.3			7	121.0	1	17.3	1	17.3	1	17.3
				1	6.1			1	6.1	25	153.4	2	12.3	1	6.1	6	36.8
1	7.8	2	15.7							18	141.2	3	23.5	2	15.7	5	39.2
		1	11.8					1	11.8	21	247.7	2	23.6			2	23.6
9	8.6	15	14.4	6	5.7	8	7.7	6	5.7	174	166.5	14	13.4	13	12.4	51	48.8
13	6.7	24	12.3	5	2.6	18	9.2	13	6.7	375	192.6	27	13.9	35	18.0	98	50.3
5	23.6	5	28.8	1	5.8	2	11.5	3	17.3	24	138.1	1	5.8	3	17.3	2	11.5
2	5.4	1	4.7	2	9.4	2	9.4			31	146.1	3	14.1	1	4.7	12	56.5
6	5.1	4	10.8	1	2.7	10	26.9	2	5.4	63	169.7	3	8.1	10	26.9	7	18.9
		14	11.8	1	0.8	4	3.4	8	6.7	257	216.4	20	16.8	21	17.7	77	64.8
6	7.6	9	11.4					9	11.4	139	176.1	11	13.9	18	22.8	25	31.7
3	9.6	5	16.0	1	1.3			6	19.2	70	224.3	7	22.4	7	22.4	7	22.4
								1	15.7	3	47.1	2	31.4	2	31.4		
		2	11.1					1	5.6	23	128.1			4	22.3	4	22.3
2	14.2	2	14.2	1	7.1			1	7.1	28	199.4	1	7.1	3	21.4	9	64.1
1	10.7									15	160.6	1	10.7	2	21.4	5	53.5
7	6.0	15	13.0	4	3.5	18	15.5	4	3.5	236	203.8	16	13.8	17	14.7	73	63.1
8	4.3	20	10.6	9	4.8	18	9.6	24	12.8	329	175.0	47	25.0	38	20.2	128	68.1
1	6.0	8	48.0	2	12.0	2	12.0	5	30.0	25	149.9	11	65.9	7	42.0	2	12.0
3	14.8	1	2.8	1	2.8	4	11.3	10	28.1	28	138.0	9	44.4	3	14.8	7	34.5
4	3.5	11	9.5	6	5.2	9	7.8	9	7.8	59	166.0	10	25.1	6	16.9	19	53.5
										217	188.3	17	14.8	22	19.1	100	86.8
3	3.9	11	14.4	6	7.9	4	5.2	14	18.3	169	221.4	19	24.9	22	28.8	37	48.5
1	3.3	5	16.6	2	6.6			7	23.2	82	271.6	8	26.5	8	26.5	17	56.3
								4	64.9	14	227.1	2	32.4	1	16.2	2	32.4
				1	5.8	2	11.5	1	5.8	31	178.5	3	17.3	4	23.0	3	17.3
1	7.4	5	36.8	2	14.7	1	7.4	2	14.7	28	206.2	4	29.5	7	51.5	13	95.7
1	11.1	1	11.1	1	11.1	1	11.1			14	155.0	2	22.1	2	22.1	2	22.1
5	4.5	9	8.1	3	2.7	14	12.5	10	9.0	160	143.3	25	25.1	16	14.3	91	81.5

Table 17.—CONTINUED.—*Mortality of Michigan, by geographical sections and groups of cities,*

Population by geographical sections and as urban and rural.	Report- ing popu- lation.	Total deaths.	Death rates per 1,000.	Still- births.	Deaths under 5 years.				Deaths and annual			
					Under 1.		1 to 4.		Consump- tion.		Typhoid fever.	
					Num- ber.	Per cent.	Num- ber.	Per cent.	Num- ber.	Rate.	Num- ber.	Rate.
MAY, 1898.....	2,162,216	2,459	12.6	111	414	17.6	170	7.2	222	113.7	25	12.8
I.—UPPER PENINSULA.....	181,524	222	12.8	15	64	30.9	24	11.6	20	115.5	1	5.8
II.—NORTHERN CO'S.....	222,758	212	10.1	9	44	21.7	25	12.8	18	85.6	3	14.3
III.—CENTRAL CO'S.....	424,888	414	11.1	19	73	18.5	32	8.1	36	96.4	8	21.4
IV.—SOUTHERN CO'S.....	1,333,046	1,611	13.5	68	233	15.1	88	5.7	148	124.0	13	10.9
ALL CITIES.....	839,936	1,072	13.6	67	197	19.6	90	9.0	80	101.4	12	15.2
Over 50,000.....	317,236	492	15.8	39	94	20.8	41	9.1	40	128.2	6	19.2
25,000 to 50,000.....	74,685	82	12.9	4	15	19.2	12	15.4	3	47.1	1	15.7
10,000 to 25,000.....	197,039	217	12.1	15	35	17.3	13	6.4	15	83.5	1	5.6
5,000 to 10,000.....	148,839	178	12.7	5	49	23.1	18	10.4	12	85.5	2	14.2
Under 5,000.....	102,137	103	11.0	4	13	13.1	6	6.1	10	107.1	2	21.4
COUNTRY.....	1,322,280	1,387	11.9	44	217	16.2	80	6.0	142	122.0	13	11.2
JUNE, 1898.....	2,144,084	2,055	11.0	89	339	17.2	132	6.7	201	107.3	29	15.5
I.—UPPER PENINSULA.....	182,891	198	11.7	13	57	30.8	27	14.6	16	94.8	4	23.7
II.—NORTHERN CO'S.....	221,021	216	10.7	12	34	16.7	16	7.8	23	114.0	4	19.8
III.—CENTRAL CO'S.....	421,671	373	10.4	9	50	13.7	23	5.8	35	97.6	3	8.4
IV.—SOUTHERN CO'S.....	1,318,501	1,268	11.1	55	198	16.3	66	5.4	127	111.2	18	15.8
ALL CITIES.....	839,936	908	11.9	61	197	23.3	70	8.3	84	110.0	14	18.3
Over 50,000.....	317,236	367	12.2	30	106	31.5	25	7.4	32	106.0	4	13.2
25,000 to 50,000.....	74,685	69	11.2	2	11	16.4	7	10.4	5	81.1	1	16.2
10,000 to 25,000.....	197,039	208	12.0	15	31	16.1	20	10.4	24	138.2	2	11.5
5,000 to 10,000.....	148,839	162	11.9	10	33	21.7	16	10.5	14	103.1	2	14.7
Under 5,000.....	102,137	102	11.3	4	16	16.3	2	2.0	9	99.6	5	55.3
COUNTRY.....	1,304,148	1,147	10.3	28	142	12.7	62	5.5	117	105.4	15	13.5
JULY, 1898.....	2,169,572	2,217	11.3	109	500	23.7	157	7.4	162	82.7	21	10.7
I.—UPPER PENINSULA.....	186,032	200	11.3	9	74	38.7	20	10.5	17	95.8	-----	-----
II.—NORTHERN CO'S.....	228,333	211	9.8	14	38	19.3	24	12.2	18	83.5	-----	-----
III.—CENTRAL CO'S.....	428,979	326	8.6	16	58	18.7	25	8.1	23	61.0	1	2.7
IV.—SOUTHERN CO'S.....	1,326,228	1,480	12.5	70	330	23.4	88	6.2	104	87.6	20	16.8
ALL CITIES.....	839,936	1,030	13.0	72	287	30.0	88	9.2	73	92.5	14	17.7
Over 50,000.....	317,236	494	15.8	44	184	40.9	48	10.7	35	112.1	8	25.6
25,000 to 50,000.....	74,685	59	9.3	5	13	24.1	4	7.4	5	78.4	1	15.7
10,000 to 25,000.....	197,039	206	11.5	13	34	17.6	12	6.2	16	89.1	2	11.1
5,000 to 10,000.....	148,839	165	11.8	7	33	20.9	18	11.4	12	85.5	2	14.2
Under 5,000.....	102,137	106	11.3	3	23	22.3	6	5.8	5	53.5	1	10.7
COUNTRY.....	1,329,636	1,187	10.1	37	213	18.5	69	6.0	89	76.0	7	6.0
AUGUST, 1898.....	2,172,269	2,454	12.5	93	609	25.8	234	9.9	198	100.9	57	29.0
I.—UPPER PENINSULA.....	183,309	247	14.1	6	112	46.5	37	15.4	11	62.9	4	22.9
II.—NORTHERN CO'S.....	228,968	206	12.3	13	70	27.7	37	14.6	18	83.3	2	9.3
III.—CENTRAL CO'S.....	426,262	384	10.2	13	82	22.1	54	14.6	30	80.1	7	18.7
IV.—SOUTHERN CO'S.....	1,333,732	1,557	13.0	61	345	23.1	106	7.1	139	116.4	44	36.8
ALL CITIES.....	839,936	1,084	13.7	60	320	31.3	106	10.4	76	96.3	22	27.9
Over 50,000.....	317,236	491	15.7	38	172	38.0	47	10.4	43	137.8	10	32.0
25,000 to 50,000.....	74,685	78	12.2	2	20	26.3	6	7.9	2	31.4	2	31.4
10,000 to 25,000.....	197,039	232	12.9	13	52	23.7	21	9.6	15	83.5	3	16.7
5,000 to 10,000.....	148,839	164	11.7	5	50	31.4	21	13.2	12	85.5	4	28.5
Under 5,000.....	102,137	119	12.7	2	26	22.2	11	9.4	4	42.8	3	32.1
COUNTRY.....	1,332,333	1,370	11.7	33	289	21.6	128	9.6	122	104.0	35	29.8

as originally published in the *Michigan Monthly Bulletin of Vital Statistics, 1898.*

death rates per 100,000 population from important diseases.

Scarlet fever.		Diphtheria.		Croup.		Measles.		Whooping cough.		Pneumonia.		Diarrheal diseases under 5 yrs.		Cerebro-spinal meningitis.		Influenza.	
Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.
5	2.6	19	9.7	10	5.1	19	9.7	22	11.3	292	149.5	45	23.0	46	23.6	65	33.3
-----	-----	3	17.3	3	17.3	2	11.6	3	17.3	24	138.6	6	34.7	4	23.1	3	17.3
-----	-----	5	23.8	-----	-----	6	28.5	3	14.3	23	109.4	11	52.3	2	9.5	2	9.5
1	2.7	2	5.4	1	2.7	3	8.0	3	8.0	53	141.9	8	21.4	8	21.4	11	29.5
4	3.4	9	7.5	6	5.0	8	6.7	13	10.9	192	160.8	20	16.8	32	26.8	49	41.0
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2	2.5	8	10.1	4	5.1	7	8.9	13	16.5	141	178.6	16	20.3	27	34.2	22	27.9
1	3.2	4	12.8	2	6.4	-----	-----	7	22.4	78	249.9	8	25.6	14	44.9	12	38.4
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	15	235.3	1	15.7	3	47.1	2	31.4
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	22	122.5	4	22.3	6	39.4	3	16.7
1	7.1	5	21.4	2	14.2	1	5.6	4	28.5	15	106.8	2	14.2	2	14.2	2	14.2
-----	-----	1	10.7	-----	-----	-----	-----	1	10.7	11	117.8	1	10.7	2	21.4	3	32.1
3	2.6	11	9.5	6	5.2	12	10.3	9	7.7	151	129.7	29	24.9	19	16.3	43	36.9
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
4	2.1	26	13.9	2	1.1	11	5.9	25	13.3	118	63.0	71	37.9	39	20.8	14	7.5
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	5.9	3	17.8	-----	-----	4	23.7	4	23.7	19	112.6	13	77.0	6	35.6	-----	-----
2	9.9	12	59.5	-----	-----	1	5.0	2	9.9	6	29.7	9	44.6	4	19.8	6	29.7
-----	-----	2	5.6	-----	-----	4	11.2	8	22.3	21	58.6	4	11.2	5	13.9	2	5.6
1	0.9	9	7.9	2	1.8	2	1.8	11	9.6	72	63.0	45	39.4	24	21.0	6	5.3
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2	2.6	7	9.2	-----	-----	4	5.2	16	21.0	58	76.0	42	55.0	27	35.4	3	3.9
-----	-----	1	3.3	-----	-----	-----	-----	2	6.6	28	92.7	26	86.1	10	33.1	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	4	61.9	5	81.1	1	16.2	3	48.7	-----	-----
-----	-----	2	11.5	-----	-----	2	11.5	5	28.8	12	69.1	5	28.8	6	34.5	1	5.8
2	14.7	3	22.1	-----	-----	2	14.7	4	29.5	8	58.9	6	44.2	7	51.5	2	14.7
-----	-----	1	11.1	-----	-----	-----	-----	1	11.1	5	55.3	4	44.3	1	11.1	-----	-----
2	1.8	19	17.1	2	1.8	7	6.3	9	8.1	60	54.1	29	26.1	12	10.8	11	9.9
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	0.5	14	7.1	5	2.6	11	5.6	40	20.4	77	39.3	267	136.2	31	15.8	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-----	-----	2	11.3	3	16.9	3	16.9	4	22.5	11	62.0	22	124.0	5	28.2	-----	-----
-----	-----	3	13.9	-----	-----	1	4.6	2	9.3	7	32.5	21	97.4	3	13.9	-----	-----
-----	-----	2	5.3	-----	-----	5	13.3	13	34.5	16	42.4	21	55.7	6	15.9	-----	-----
1	0.8	7	5.9	2	1.7	2	1.7	21	17.7	43	36.2	203	170.9	17	14.3	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-----	-----	7	8.9	3	3.8	3	3.8	21	26.6	42	53.2	174	20.5	14	17.7	-----	-----
-----	-----	4	12.8	-----	-----	-----	-----	4	12.8	20	64.1	130	416.5	7	22.4	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	5	78.4	2	31.4	3	47.1	1	15.7	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	7	39.0	7	39.0	14	78.0	1	5.6	-----	-----
-----	-----	3	21.4	1	7.1	2	14.2	4	28.5	8	57.0	17	121.1	3	21.4	-----	-----
-----	-----	-----	-----	2	21.4	-----	-----	1	10.7	5	53.5	10	107.1	2	21.4	-----	-----
1	0.9	7	6.0	2	1.7	8	6.8	19	16.2	35	29.9	93	79.5	17	14.5	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
5	2.5	21	10.7	2	1.0	5	2.5	36	18.3	64	32.6	437	222.7	40	20.4	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-----	-----	3	17.2	-----	-----	-----	-----	5	28.6	6	34.3	85	483.2	8	45.8	-----	-----
1	4.6	2	9.3	-----	-----	1	4.6	3	13.9	6	27.7	52	240.6	5	23.1	-----	-----
-----	-----	5	13.3	-----	-----	3	8.0	5	13.3	11	29.4	70	186.8	5	13.3	-----	-----
4	3.3	11	9.2	2	1.7	1	0.8	23	19.3	41	34.3	230	192.5	22	18.4	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
5	6.3	9	11.4	1	1.3	2	2.5	19	24.1	26	32.9	223	282.5	19	24.1	-----	-----
1	3.2	5	16.0	1	3.2	1	3.2	9	28.8	16	51.3	111	355.6	9	28.8	-----	-----
-----	-----	1	15.7	-----	-----	1	15.7	2	31.4	3	47.1	9	141.2	-----	-----	-----	-----
3	16.7	2	11.1	-----	-----	-----	-----	4	22.3	4	22.3	50	278.4	4	22.3	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	1	7.1	2	14.2	35	249.3	1	7.1	-----	-----
1	10.7	1	10.7	-----	-----	-----	-----	3	32.1	1	10.7	18	192.7	5	53.5	-----	-----
-----	-----	12	10.2	1	0.9	3	2.6	17	14.5	38	32.4	214	182.4	21	17.9	-----	-----

Table 17.—CONCLUDED.—*Mortality of Michigan, by geographical sections and groups of cities,*

Population by geographical sections and as urban and rural.	Reporting population.	Total deaths.	Death rates per 1,000.	Still-births.	Deaths under 5 years.				Deaths and annual			
					Under 1.		1 to 4.		Consumption.		Typhoid fever.	
					Number.	Per cent.	Number.	Per cent.	Number.	Rate.	Number.	Rate.
SEPTEMBER, 1898.....	2,189,022	2,640	13.8	107	677	26.7	271	10.7	174	91.0	94	49.1
I.—UPPER PENINSULA.....	185,103	273	16.0	13	106	40.8	27	10.4	12	70.3	11	64.4
II.—NORTHERN CO'S.....	233,838	287	13.4	10	82	29.6	45	16.2	9	42.2	7	32.3
III.—CENTRAL CO'S.....	431,083	507	13.8	19	138	28.3	61	12.5	48	131.0	18	49.1
IV.—SOUTHERN CO'S.....	1,338,993	1,573	13.6	65	351	23.3	138	9.2	105	90.5	58	50.0
ALL CITIES.....	839,936	1,109	14.5	73	299	28.9	95	9.2	72	94.3	47	61.6
Over 50,000.....	317,236	466	15.4	42	137	32.3	41	9.7	33	109.3	14	46.4
25,000 to 50,000.....	74,685	83	13.5	10	21	28.8	4	5.6	6	97.3	4	64.9
10,000 to 25,000.....	197,039	261	15.0	12	68	27.3	25	10.0	12	69.1	15	86.4
5,000 to 10,000.....	148,839	201	14.8	9	53	27.6	15	7.8	14	103.1	9	66.3
Under 5,000.....	102,137	98	10.8	—	20	20.4	10	10.2	7	77.5	5	55.3
COUNTRY.....	1,349,086	1,531	13.3	34	378	25.3	176	11.8	102	88.8	47	40.9
OCTOBER, 1898.....	2,170,350	2,414	12.3	98	470	20.3	192	8.3	208	106.1	108	55.1
I.—UPPER PENINSULA.....	183,671	236	13.5	5	69	29.9	37	16.0	18	102.7	9	51.4
II.—NORTHERN CO'S.....	229,507	226	10.4	4	66	29.7	18	8.1	18	83.1	14	64.6
III.—CENTRAL CO'S.....	424,764	398	10.7	12	86	22.3	29	7.5	33	88.4	23	61.6
IV.—SOUTHERN CO'S.....	1,332,408	1,554	13.0	77	249	16.9	108	7.3	139	116.5	62	52.0
ALL CITIES.....	839,936	1,037	13.1	81	207	21.7	96	10.0	94	119.1	34	43.1
Over 50,000.....	317,236	461	14.8	55	90	22.2	38	9.4	38	121.7	15	48.1
25,000 to 50,000.....	74,685	47	7.4	5	13	31.0	3	7.1	5	78.4	1	15.7
10,000 to 25,000.....	197,039	230	12.8	10	46	20.9	17	7.7	21	116.9	11	61.3
5,000 to 10,000.....	148,839	191	13.6	7	41	22.3	26	14.1	20	142.4	5	35.6
Under 5,000.....	102,137	108	11.6	4	17	16.3	12	11.5	10	107.1	2	21.4
COUNTRY.....	1,330,414	1,377	11.8	17	263	19.3	96	7.1	114	97.3	74	63.2
NOVEMBER, 1898.....	2,159,162	2,185	11.6	117	300	14.5	122	5.9	170	90.1	77	40.8
I.—UPPER PENINSULA.....	170,912	188	11.9	16	46	26.7	19	11.0	16	101.5	1	6.3
II.—NORTHERN CO'S.....	228,864	206	9.9	15	37	19.4	16	8.4	22	105.3	9	43.1
III.—CENTRAL CO'S.....	425,323	328	9.1	18	44	14.2	25	8.1	21	58.1	22	60.8
IV.—SOUTHERN CO'S.....	1,334,063	1,463	12.7	68	173	12.4	62	4.4	111	96.0	45	38.9
ALL CITIES.....	839,936	966	12.7	83	144	16.3	66	7.5	86	112.7	22	28.8
Over 50,000.....	317,236	419	13.9	40	69	18.2	29	7.7	43	142.4	8	25.5
25,000 to 50,000.....	74,685	54	8.8	6	10	20.8	5	10.4	5	81.1	1	16.2
10,000 to 25,000.....	197,039	214	12.3	18	29	14.8	13	6.6	19	109.4	5	23.8
5,000 to 10,000.....	148,839	168	12.4	13	25	16.1	7	4.5	13	95.7	4	29.5
Under 5,000.....	102,137	111	12.3	6	11	10.5	12	11.4	6	66.4	4	44.3
COUNTRY.....	1,319,226	1,219	10.9	34	156	13.2	56	4.7	84	74.5	55	49.0
DECEMBER, 1898.....	2,176,596	2,341	11.9	116	359	16.1	121	5.4	215	109.4	31	15.8
I.—UPPER PENINSULA.....	183,804	223	12.7	13	58	27.6	26	12.4	24	138.9	2	11.4
II.—NORTHERN CO'S.....	234,848	241	10.9	13	59	25.9	16	7.0	20	90.2	1	4.5
III.—CENTRAL CO'S.....	425,265	394	10.5	15	68	15.3	16	4.2	34	91.0	15	40.1
IV.—SOUTHERN CO'S.....	1,332,679	1,483	12.4	75	184	13.1	63	4.5	137	114.8	13	10.9
ALL CITIES.....	839,936	1,086	13.8	82	182	18.1	75	7.5	97	122.9	13	16.5
Over 50,000.....	317,236	431	13.8	42	79	20.3	34	8.7	32	102.5	2	6.4
25,000 to 50,000.....	74,685	75	11.8	4	13	18.3	3	4.2	9	141.2	1	15.7
10,000 to 25,000.....	197,039	236	13.1	13	35	15.7	12	5.4	25	139.2	4	22.3
5,000 to 10,000.....	148,839	202	14.4	13	33	17.5	20	10.6	14	99.7	3	21.4
Under 5,000.....	102,137	142	15.2	10	22	16.7	6	4.5	17	182.0	3	32.1
COUNTRY.....	1,336,660	1,255	10.7	34	177	14.5	46	3.8	118	100.3	19	15.3

DEATHS.

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as originally published in the *Michigan Monthly Bulletin of Vital Statistics, 1898.*

death rates per 100,000 population from important diseases.

Scarlet fever.		Diphtheria.		Croup.		Measles.		Whooping cough.		Pneumonia.		Diarrheal diseases under 5 yrs.		Cerebro-spinal meningitis.		Influenza.	
Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.	Number.	Rate.
4	2.1	27	14.1	4	2.1	2	1.0	40	20.9	100	52.3	483	252.5	41	21.4	-----	-----
-----	-----	3	17.6	-----	-----	-----	-----	2	11.7	9	52.7	78	456.8	5	29.3	-----	-----
1	2.7	4	10.9	1	2.7	1	2.7	10	27.3	11	32.8	68	318.6	2	9.4	-----	-----
3	2.6	20	17.2	3	2.6	1	0.9	26	22.4	73	62.9	217	187.1	6	16.4	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	28	24.1	-----	-----
3	3.9	12	15.7	1	1.3	1	1.3	20	26.2	53	69.4	159	208.3	16	21.0	-----	-----
2	6.6	7	23.2	-----	-----	1	3.3	6	19.9	24	79.5	61	202.1	3	9.9	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	4	64.9	2	32.4	8	129.8	-----	-----	-----	-----
1	5.8	3	17.3	-----	-----	-----	-----	5	28.8	11	63.3	42	241.8	9	51.8	-----	-----
-----	-----	2	14.7	-----	-----	-----	-----	3	22.1	9	66.3	34	250.4	2	14.7	-----	-----
1	0.9	15	13.1	1	11.1	-----	-----	2	22.1	7	77.5	14	155.0	2	22.1	-----	-----
-----	-----	-----	-----	3	2.6	1	0.9	20	17.4	47	40.9	324	282.0	25	21.8	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
6	3.1	40	20.4	15	7.7	6	3.1	18	9.2	114	58.1	234	119.4	28	14.3	-----	-----
-----	-----	5	28.5	1	5.7	3	17.1	2	11.4	20	14.2	32	182.7	3	17.1	-----	-----
2	9.2	2	9.2	4	4.6	-----	-----	1	4.6	13	60.0	30	138.5	1	4.6	-----	-----
1	2.7	8	21.4	-----	-----	3	8.0	4	10.7	17	45.5	46	123.2	7	18.7	-----	-----
3	2.5	25	20.9	13	10.9	-----	-----	11	9.2	64	53.6	126	105.6	17	14.2	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3	3.8	25	31.7	14	17.7	3	3.8	5	6.3	55	69.7	82	103.9	12	15.2	-----	-----
1	3.2	11	35.2	10	32.0	-----	-----	2	6.4	23	73.7	29	92.9	5	16.0	-----	-----
-----	-----	1	15.7	-----	-----	-----	-----	1	15.7	2	31.4	5	78.4	1	15.7	-----	-----
-----	-----	8	44.5	1	5.6	-----	-----	1	5.6	10	55.7	20	111.4	2	11.1	-----	-----
2	14.2	4	28.5	2	14.2	-----	-----	1	7.1	18	128.2	15	106.8	-----	-----	-----	-----
-----	-----	1	10.7	1	10.7	3	32.1	-----	-----	2	21.4	13	139.2	4	42.8	-----	-----
3	2.6	15	12.8	1	0.9	3	2.6	13	11.1	59	50.4	152	129.8	16	13.7	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
5	2.7	34	18.0	13	6.9	2	1.1	13	6.9	189	100.2	48	25.4	27	14.3	-----	-----
-----	-----	2	12.7	2	12.7	2	12.7	2	12.7	25	158.6	6	38.1	5	31.7	-----	-----
-----	-----	7	33.5	1	4.8	-----	-----	1	4.8	18	86.2	4	19.1	2	9.6	-----	-----
1	2.8	5	13.8	1	2.8	-----	-----	4	11.1	27	74.7	3	8.3	6	16.6	-----	-----
4	3.5	20	17.3	9	7.8	-----	-----	6	5.2	119	103.0	35	30.3	14	12.1	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
3	3.9	15	19.6	10	13.1	2	2.6	7	9.2	95	124.4	22	28.8	11	14.4	-----	-----
1	3.3	8	26.5	6	19.9	-----	-----	1	3.3	44	145.7	13	43.1	4	13.2	-----	-----
-----	-----	1	16.2	1	16.2	-----	-----	1	16.2	5	81.1	-----	-----	1	16.2	-----	-----
1	5.8	2	11.5	1	5.8	-----	-----	3	17.3	19	109.4	4	23.0	1	5.8	-----	-----
1	7.4	5	36.8	1	7.4	-----	-----	1	7.4	12	88.4	4	29.5	4	29.5	-----	-----
-----	-----	-----	-----	1	11.1	2	22.1	1	11.1	15	166.0	1	11.1	1	11.1	-----	-----
2	1.8	19	16.9	3	2.7	-----	-----	6	5.3	94	83.7	26	23.2	16	14.2	-----	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
15	7.6	38	19.3	12	6.1	2	1.0	18	9.2	228	116.0	32	16.3	29	14.7	40	20.3
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	5.7	3	17.1	-----	-----	2	11.4	4	22.8	31	176.8	4	22.8	4	22.8	-----	-----
-----	-----	2	9.0	-----	-----	-----	-----	4	18.0	24	108.3	3	13.5	4	18.0	5	22.6
2	5.4	7	18.7	4	18.0	-----	-----	2	0.5	36	96.3	9	24.1	1	2.7	6	16.1
12	10.1	26	21.8	8	6.7	-----	-----	8	6.7	137	114.8	16	13.4	20	16.8	29	24.3
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
7	8.9	19	24.1	4	5.1	2	2.5	10	12.7	106	134.3	18	22.8	15	19.0	22	27.9
-----	-----	13	41.6	3	9.6	-----	-----	3	9.6	44	141.0	10	32.0	9	28.8	12	38.4
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	9	141.2	2	31.4	-----	-----	1	15.7
1	5.6	1	5.6	1	5.6	-----	-----	6	33.4	21	116.9	3	16.7	3	16.7	5	27.8
5	35.6	4	28.5	-----	-----	2	14.2	1	7.1	14	99.7	1	7.1	2	14.2	-----	-----
1	10.7	1	10.7	-----	-----	-----	-----	-----	-----	18	192.7	2	21.4	1	10.7	4	42.8
8	6.8	19	16.1	8	6.8	-----	-----	8	6.8	122	103.7	14	11.9	14	11.9	18	15.3

DEATHS IN URBAN AND RURAL DISTRICTS, 1898.

Table 17 has also been utilized as the source of the data for the relative death rates of the urban and rural populations of Michigan. The returns from the cities of Michigan are made with even greater promptness than those from the State at large, the number of deaths returned from them during 1898 and published in the *Bulletin* of the following month being 12,538 or 98.69 per cent of the total number of deaths, 12,704, compiled from cities in Table V, p. 64, which includes all delayed returns for the year. It may be stated in this connection that not a single one of the cities of Michigan has failed to appear in the *Monthly Bulletin of Vital Statistics* since the beginning of registration, and that the delayed returns referred to above are individual certificates which failed to reach the registrars in time for transmission.

Table 18.—*Cities of Michigan, grouped in order of population by State census of 1894, with deaths and death rates per 1,000 estimated population, 1898. (Stillbirths included.)*

Cities.	Population by State census, 1894.	Deaths returned, 1898.	Death rate per 1,000 est'd population.	Cities.	Population by State census, 1894.	Deaths returned, 1898.	Death rate per 1,000 est'd population.
ALL CITIES.....	839,936	12,704	13.6	Marquette.....	9,726	154	14.9
CITIES OVER 50,000 POPULATION.....	317,236	5,466	14.8	Monroe.....	5,613	73	12.2
Detroit.....	237,798	4,355	16.1	Mt. Clemens.....	5,649	95	14.5
Grand Rapids.....	79,438	1,111	11.3	Negaunee.....	5,940	72	12.4
CITIES FROM 25,000 TO 50,000 POPULATION.....	74,685	842	11.2	Owosso.....	8,272	107	10.7
Bay City.....	30,042	312	9.7	Pontiac.....	7,277	152	18.2
Saginaw.....	44,643	530	11.9	Sault Ste. Marie.....	7,244	140	16.0
CITIES FROM 10,000 TO 25,000 POPULATION.....	197,039	2,797	13.2	Traverse City.....	5,684	122	17.4
Alpena.....	12,139	159	12.2	Ypsilanti.....	6,126	89	14.5
Ann Arbor.....	11,009	192	15.1	CITIES UNDER 5,000 POPULATION.....	102,137	1,359	12.3
Battle Creek.....	15,522	259	14.5	Albion.....	4,844	53	8.9
Flint.....	10,420	136	12.3	Au Sable.....	2,661	17	6.4
Ishpeming.....	11,687	157	12.9	Belding.....	3,006	28	6.5
Jackson.....	22,615	339	13.9	Bessemer.....	2,528	58	22.9
Kalamazoo.....	21,054	397	16.4	Charlotte.....	4,350	54	11.2
LaSalle.....	15,847	181	9.7	Clare.....	1,392	16	9.9
Manistee.....	13,450	132	9.4	Corunna.....	1,551	21	12.2
Menominee.....	12,532	142	9.8	Dowagiac.....	3,583	48	11.3
Muskegon.....	20,224	256	12.7	East Tawas.....	2,348	22	8.8
Port Huron.....	18,140	266	13.4	Eaton Rapids.....	2,157	36	15.4
West Bay City.....	12,340	181	14.7	Gladstone.....	2,131	32	10.9
CITIES FROM 5,000 TO 10,000 POPULATION.....	148,839	2,240	13.5	Gladwin.....	882	10	11.3
Adrian.....	9,511	135	13.2	Grand Ledge.....	2,218	31	11.0
Benton Harbor.....	5,315	73	10.5	Greenville.....	3,113	41	12.9
Big Rapids.....	5,202	72	13.8	Harrison.....	746	8	10.7
Cadillac.....	5,105	55	9.6	Hastings.....	3,014	33	10.8
Cheboygan.....	6,957	140	18.2	Hillsdale.....	4,121	45	10.4
Coldwater.....	5,286	78	14.6	Hudson.....	2,346	37	14.7
Escanaba.....	8,124	155	16.4	Lapeer.....	2,952	41	13.0
Grand Haven.....	5,270	55	10.0	Marine City.....	3,485	48	13.0
Holland.....	6,307	68	7.8	Marshall.....	4,599	63	12.0
Konia.....	5,024	66	11.9	Mason.....	1,761	23	13.6
Iron Mountain.....	7,639	117	15.3	Midland.....	2,484	19	7.1
Ironwood.....	9,324	131	12.0	Mt. Pleasant.....	3,178	29	5.5
Ludington.....	8,244	91	10.1	Niles.....	4,598	67	13.9
				North Muskegon.....	911	5	5.5
				Norway.....	3,587	66	14.7
				Petoskey.....	3,649	55	12.4
				St. Clair.....	2,575	52	18.6
				St. Ignace.....	2,068	34	16.4
				St. Joseph.....	4,519	64	12.1
				St. Louis.....	2,204	29	13.2
				Stanton.....	1,303	11	8.4
				Sturgis.....	2,834	42	13.2
				Tawas City.....	1,230	17	13.8
				Three Rivers.....	3,140	34	10.8
				Wyandotte.....	4,209	79	17.2

In the classification of the cities of the State according to the number of inhabitants by the last census, it will be noted that a considerable portion of the so-called urban population is embraced in cities having less than 5,000 inhabitants. Among these are several with even less than 1,000 population according to the last census. The explanation of this arrangement is that the basis of classification is simply the possession of a city charter, and that no limit of population is set for this purpose by the Michigan law. When the Legislature grants a charter to a small village of a few hundred inhabitants, perhaps for the purpose of a more effective local police administration or for other reasons, the community is legally entitled to recognition as a "city," and is so included in the statistical reports of the State. The conditions of life, however, in these small cities are not what should be considered under the head of urban, and hence for purposes of statistical study, and especially for comparisons with eastern states, the group of cities having less than 5,000 persons, and possibly the group above this, namely, cities of from 5,000 to 10,000 population, should be considered as rural. The United States census makes an excellent division on the basis of 8,000 population.

The total number of deaths returned from the cities of the State is shown, by months and sex, in Table V, p. 64. Table VI, beginning on p. 68, presents the same data by ages of decedents, and Table VII, p. 78, shows the causes of death for individual cities. The total number of deaths filed by the city registrars for the year 1898 was 12,704, whose distribution by groups of cities, in accordance with population, is shown in Table 18, together with the rates per 1,000 estimated population in 1898. In certain cases, where cities showed great losses of population from 1890 to 1894, in some instances so great that a continuance of the same for a few years would quite wipe out the towns, the rates have been based upon the populations stated by the State census of 1894, without attempt to estimate the same. In general it may be said that rates based upon very small populations may be questionable unless supported by the experience of several years.

Some interesting relations are brought out by the examination of Table 18, and if full confidence could be placed in the returns for the year as representative of average conditions, deductions of special importance to sanitarians could be made. For the reason, however, that the small number of deaths returned from some of the cities for a single year are hardly sufficient for the establishment of authoritative rates, it will be perhaps preferable to await the results of several years of registration before making a final comparison of the rates of individual cities. The matter of age distribution must also be considered in comparing the rates of different cities as in comparing the several county rates. The estimation of population for individual cities is also difficult, for which reason the rates in the table should be regarded as only provisional until the results of the census are available for their correction. In the case of Alpena there was gross neglect and disregard of duty in enforcing the provisions of the law on the part of the city registrar, owing to the lack of a special fee for his services (the law supposes the services of registrars in cities of 10,000 population and over to be compensated by their regular salaries), hence, as stated in the *Monthly Bulletin of Vital Statistics* for January, 1900, the death rate for Alpena is probably worthless. The same may be true, to a greater or less degree, of other cities in the list, especially some of those having suspiciously low rates. It must not be

understood that a low rate of mortality is necessarily indicative of carelessness or inefficiency in conducting the work of registration, but in order to make the figures fully dependable in such cases, some special pains should be taken to make their correctness certain. The State Department has endeavored, just as far as the reasonable intent of the law would seem to permit, to fulfill its duty and see that the registration law is uniformly and efficiently administered throughout the State, but the neglect of a careless or incompetent local registrar may defeat the entire purpose of the law. Whenever cases of neglect are called to the attention of the Department, letters to the undertakers, physicians, registrars or other delinquent persons are promptly sent, and followed up, if necessary, by the efforts of the prosecuting attorney, but in most such cases of neglect information does not reach the central office except through the local registrar. It would be very desirable if the Department were authorized to personally inspect the records and manner of handling the returns in the registration offices of the cities and larger villages, by means of a special inspector, such as is attached to the registration service of Ontario. In this way many irregularities might be corrected, the work of the registrars greatly assisted and more uniform and valuable data be collected. It has proved very difficult, and practically impossible, to call the attention of the local registrars to possible shortcomings unless definite proof of the same was at end, as local pride is at once aroused by any suggestion as to defects in the administration of the law.

SECTION II.—CAUSES OF DEATH IN MICHIGAN DURING THE YEAR 1898.

Having considered in the preceding section of this report the occurrence of deaths in the State during 1898, considered as a whole, we now come to the individual causes producing them. At the outset, it is gratifying to be able to state that the returns of this very important class of facts are in a much more satisfactory condition than ever before as a basis for the statistics following. Under the old law the returns were copied by the county clerks from original statements obtained and recorded by supervisors and assessors, usually from the family or friends of decedents. The cause of death, even if originally based on the statement of the medical attendant, was frequently so garbled by the time it reached this Department as to be quite unintelligible and worthless for statistical purposes.

The causes of death as compiled in the present report are based upon the original certificates of the physicians who attended the deceased persons, which are now on file in the Department of State.

To this statement exception must be made only to the effect that for certain cities, including Detroit and Grand Rapids, exact transcripts of the original certificates of death, on blanks of the same form as the originals and each individually certified by the city registrar as an exact copy, are filed instead of the originals, and are fairly satisfactory. The undesirability of transcripts of any kind, however, is shown by the fact that the returns from these cities, the largest in the State and which should be the most satisfactory, are not so in point of fact. Errors of copying are made and not noted by a careful comparison; essential items of the statement of cause of death are omitted when the copyist cannot make out the physician's statement; and as a whole no certified statement, however neatly executed, is as valuable as the original would have been. For this reason it is to be hoped that all of the cities of the State will eventually give up the system of making these transcripts, as some-

of them have already done, and send in the original certificates for preservation at the seat of the State government. The records on the local registers will serve every requirement for local use.

A general view of the prevalence of important causes of death may be obtained by an examination of Diagram I, which faces the title page. This diagram was originally prepared as the frontispiece of the second volume of the *Monthly Bulletin of Vital Statistics*, and the condensed list of causes therein shown does not exactly compare with the condensed classification given in Table 20, p. lxxvi, and used as a basis for the discussion of causes of death in this report. By referring to the extended list of causes given in Table 19, p. lxxiv, any differences in the manner of presentation may be readily reconciled. In this diagram the important practical distinction between diseases restricted by the public health service—"dangerous communicable diseases"—is indicated by the difference in color of the bars denoting the causes of death.

In the table printed in connection with Diagram I, the percentage of each cause of death to the total number of deaths from specified diseases is given under the heading "Proportional deaths." This ratio, while not as useful for most purposes as the death rates proper, serves to show the relative importance of the different diseases in a form convenient for comparison. Thus we observe that tuberculosis, including deaths from other forms as well as the most common form of pulmonary tuberculosis, was responsible for 11.0 per cent of the total deaths from disease. Deaths from unknown causes, violence, stillbirths and premature births are properly excluded from this comparison. In comparing these figures with those given in former reports, the possible difference in accuracy of designating causes of death by the medical attendants and by non-professional persons, who made these returns prior to 1898, must be considered. It may not unlikely be found that no reliable comparisons with previous years can be made, but that the old statistics must be disregarded on account of their unreliable origin. Even with the original certificates of physicians and a uniform method of classifying their returns, some irregularities will necessarily exist from the various ways of viewing the causation of a death and the difficulty which seems to exist in some instances as to whether a given disease, among several affecting a decedent, is properly to be regarded as the disease causing death, the immediate cause, or as a merely contributory cause or complication. The statistical treatment of causes of death is by no means an exact science as yet, although the general adoption of a uniform classification in this country is the first and absolutely necessary step towards greater precision.

A tabular exhibition of the deaths and death rates by causes of death in Michigan for the year 1898 according to the extended form of the Bertillon classification may be found on the following page, and a condensed list, showing the mortality by the geographical sections of the State for the months of the year and also for the various age periods may be found in Table 20, beginning on page lxxvi. The primary data, from which these tables as well as all of the tables and diagrams illustrating individual diseases are derived, may be found in Table III, p. 20, Table IV p. 40, and for cities in Table VII, p. 78. The list numbers used in these primary tables are the same as those employed in the exposition of the Bertillon classification contained in the Appendix, to which reference may conveniently be made under each title.

Table 19.—Deaths in Michigan during the year 1898, statistically classified by the Bertillon system, with rates per 100,000 estimated population.

Classification number.	Causes of death.	Number of deaths.	Death rates per 100,000.	Classification number.	Causes of death.	Number of deaths.	Death rates per 100,000.
	ALL CAUSES*.....	29,474	1,254.2	46	Other forms of insanity.....	67	2.8
	Stillbirths.....	1,300	55.3	47	Epilepsy.....	97	4.1
				48	Convulsions.....	24	1.0
				49	Convulsions of infants.....	516	22.0
				50	Tetanus.....	20	0.8
	GENERAL DISEASES.....	7,181	305.6	40-41	Other nervous diseases.....	317	13.5
				51-54			
I	EPIDEMIC DISEASES.....	2,015	85.7	IV	DISEASES OF THE CIRCULATORY SYSTEM.....	2,540	108.1
1	Typhoid fever.....	499	21.2		Pericarditis.....	109	4.6
1a	Typho-malarial fever.....	73	3.1	55	Endocarditis.....	74	3.1
2	Typhus fever.....			56	Organic heart disease.....	2,016	85.8
3	Scurvy.....	16	0.7	57	Angina pectoris.....	143	6.1
4	Smallpox.....	1	0.0	58	Diseases of the arteries.....	74	3.1
5	Measles.....	131	5.6	59	Embolism.....	19	0.8
6	Scarlet fever.....	91	3.9	60	Varices, hemorrhoids.....	3	0.1
7	Whooping cough.....	282	12.0	61	Phlebitis.....	12	0.5
8a	Diphtheria.....	345	14.7	62	Lymphangitis.....	2	0.1
8b	Membranous croup.....	63	2.7	63	Other lymphatic diseases.....	10	0.4
8c	Croup.....	48	2.0	64	Hemorrhage.....	60	2.5
9	Influenza.....	455	19.4	65	Other circulatory diseases.....	18	0.8
10	Miliary fever.....			66			
11	Asiatic cholera.....			V	DISEASES OF THE RESPIRATORY SYSTEM.....	3,236	137.7
12	Cholera nostras.....	2	0.1		Diseases of the nose.....	2	0.1
13	Other epidemic diseases.....	9	0.4	67	Diseases of the larynx and thyroid.....	43	1.8
II	OTHER GENERAL DISEASES.....	5,166	219.8	68	Acute bronchitis.....	395	16.8
14	Pyemia and septicemia.....	168	7.1	69	Chronic bronchitis.....	248	10.6
15	Glanders and farcy.....			70	Broncho-pneumonia.....	242	10.3
16	Malignant pustule.....			71	Pneumonia.....	1,805	76.8
17	Rabies.....	1	0.0	72	Pleurisy.....	107	4.5
18	Relapsing fever.....			73	Congestion of the lungs.....	159	6.8
19-20	Malaria.....	175	7.4	74	Gangrene of the lungs.....	5	0.2
21	Pellagra.....			75	Asthma and emphysema.....	111	4.7
22a	Tuberculosis.....	2,826	120.3	76	Other respiratory diseases.....	119	5.1
22b	Lungs.....	2,153	91.6	77			
22c	Meninges.....	120	5.1	VI	DISEASES OF THE DIGESTIVE SYSTEM.....	4,106	174.7
22d	Peritoneum.....	120	5.1		Diseases of the mouth.....	31	1.3
22e	Skin.....	1	0.0		Disease of the pharynx and esophagus.....	36	1.5
22f	Other organs.....	62	2.6	80	Ulcer of the stomach.....	61	2.6
23	General.....	370	15.7	81	Other diseases of stomach.....	423	18.0
24	Scrofula.....	18	0.8	82	Cholera infantum.....	1,782	75.8
25a	Syphilis.....	55	2.4	83	Diarrhea and enteritis.....	314	13.4
25b	Cancer.....	1,321	56.2	84	Dysentery.....	150	6.4
25c	Mouth.....	32	1.4	85,87	Hernia and intest. obst.....	254	10.8
25d	Stomach or liver.....	494	21.0		Other diseases of the intestines.....	117	5.0
25e	Intestines or rectum.....	106	4.5	88	Acute yellow atrophy of the liver.....	15	0.6
25f	Uterus.....	155	6.6	89,90	Cirrhosis of the liver.....	148	6.3
25g	Breast.....	83	3.5	91,92	Other diseases of the liver.....	314	13.4
26-27	Skin.....	41	1.7	93	Peritonitis.....	284	12.1
28	Other organs.....	410	17.4	94	Other diseases of the digestive system.....	12	0.5
29	Rheumatism.....	205	8.7	95	Iliac abscess.....	165	7.0
30	Diabetes.....	187	8.0	VII	DISEASES OF THE GENITO-URINARY SYSTEM.....	1,452	61.8
31	Exophthalmic goitre.....	7	0.3		Acute nephritis.....	96	4.1
32	Addison's disease.....	20	0.8		Bright's disease.....	915	38.9
33	Leukemia.....	19	0.8		Other diseases of kidneys.....	104	4.4
34	Anemia, chlorosis.....	107	4.6		Vesical calculi.....	6	0.3
35-37	Other general diseases.....				Diseases of the bladder.....	144	6.1
	Alcoholism.....	47	2.0		Diseases of the male genital organs.....	59	2.5
	Chronic poisoning.....	10	0.4		Uterine tumor.....	21	0.9
					Other uterine diseases.....	20	0.9
III	LOCAL DISEASES.....	17,969	764.6				
	DISEASES OF THE NERVOUS SYSTEM AND OF THE ORGANS OF SENSE.....	3,963	169.1				
38	Encephalitis.....	129	5.5				
39a	Simple meningitis.....	417	17.7				
39b	Cerebrospinal meningitis.....	254	10.8				
40	Apoplexy.....	1,144	48.7				
41	Cerebral softening.....	94	4.0				
42	Paralysis.....	789	33.6				
43	General paralysis of insane.....	95	4.0				

* Including stillbirths.

Table 19.—CONCLUDED.—Deaths in Michigan, 1898, statistically classified.

Classification number.	Causes of death.	Number of deaths.	Death rates per 100,000.	Classification number.	Causes of death.	Number of deaths.	Death rates per 100,000.
113	Ovarian tumor.....	27	1.1	142b	Asphyxia.....		
107, 108	Other diseases of the female genital organs.....	60	2.6	142c	Strangulation.....	49	2.1
114, 115				142d	Drowning.....	17	0.7
VIII	PURPERAL DISEASES.....	387	16.5	142e	Firearms.....	36	1.5
116-118	Accidents of pregnancy.....	151	6.4	142f	Cutting instruments.....	21	0.9
123-124				142g	Fall from height.....	1	0.0
119,	Puerperal septicemia.....	170	7.2	142h	Crushing.....		
120-122	Puerperal albuminuria.....	66	2.8	142i	Other methods.....	8	0.3
121							
IX	DISEASES OF THE SKIN AND CELLULAR TISSUE.....	227	9.7	143	B. Accidents.....	1,455	61.9
125	Erysipelas.....	66	2.8	144	Fractures.....	152	6.5
126	Gangrene.....	91	3.9	145a	Dislocations.....	16	0.7
127	Anthrax.....	3	0.1	145b	Gunshot.....	19	3.3
128	Phlegmon, acute abscess.....	47	2.0	145c	Lightning.....	11	0.5
129	Other diseases of the skin.....	20	0.9	145d	Mining accidents.....	60	2.5
X	DISEASES OF THE LOCOMOTOR SYSTEM.....	90	3.8	145e	Railroad accidents.....	158	6.7
130	Pott's disease.....	37	1.6	145f	Vehicles and horses.....	90	3.8
131	Chronic or cold abscess.....	10	0.4	146a	{ Fire (burn).....	102	4.3
133	White swellings.....	5	0.2	146b	{ Hot liquid (scald).....	17	0.7
132,	Other diseases of the locomotor system.....	38	1.6	146c	{ Corrosive substance.....	3	0.1
134-136				147a	{ Sunstroke.....	18	0.7
XI	MALFORMATIONS.....	140	6.0	147b	{ Freezing.....	11	0.5
137	Malformations.....	140	6.0	148	Accidental drowning.....	250	10.6
XII	DISEASES OF INFANCY.....	1,170	49.8	149	Starving.....		
138a	Congenital debility.....	747	31.8	150	Noxious gases.....	7	0.3
138b	Premature birth.....	394	16.8	151	Other accidental poisons.....	75	3.2
139	Want of care.....	10	0.5	152a	Other accidents.....	406	17.3
140	Other diseases of infancy.....	19	0.8	152b			
XIII	DISEASES OF OLD AGE.....	658	28.0	XV	C. Homicide.....	33	1.4
141	Senile debility.....	658	28.0	153	Homicide.....	33	1.4
XIV	VIOLENCE.....	1,677	71.4	154	CAUSES ILL-DEFINED.....	1,347	57.3
142a	A. Suicide.....	189	8.0	155a	Exhaustion, cachexia, debility.....	313	13.3
	Poison.....	57	2.4	155b	Fever, inflammation.....	41	1.7
				156	Dropsy.....	189	8.0
				157	Heart failure.....	349	14.8
				158	Asphyxia, cyanosis.....	11	0.5
				159	Sudden death.....	11	0.5
				161	Abdominal tumor.....	33	1.4
					Other tumors.....	46	2.0
					Unknown or not specified causes.....	354	15.1

Examination of the deaths recorded in Table 19 will show that many of the causes are quite insignificant as regards number, and that very little sacrifice of statistical completeness would be made by their entire omission or rather inclusion under some more general title. It will also be much more convenient to study an abbreviated list, as the various relations of the mortality in the geographical sections can thus be shown without an undue sacrifice of space. One of the condensed systems recommended as a part of the Bertillon classification might have been adopted, according to the plan shown in the Appendix, but on careful study none of them seemed to quite fulfill the purpose of such a condensed list. While the number of titles should be abbreviated, the general outline of the classification in its extended form should be scrupulously preserved, so that comparisons may be accurately made. This cannot be done when certain diseases are left out of their proper positions by being relegated to the unclassified list at the end of the table, as the proportion of the preceding groups is thereby destroyed. Hence the following table was devised for the purpose of showing the general relations of the causes of death in the State during the year in a correct manner, but greatly abridged from the longer classification.

Table 20.—Causes of death in Michigan, by months and ages,

Line number.	Causes of death, 1898.	Total deaths, 1898.	Rate per 100,000 estimated reporting population.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	ALL CAUSES.....	29,474	1,254.3	2,385	2,336	2,757	2,751	2,545	2,119	2,262	2,510	2,685	2,489	2,258	2,377
2	Stillbirths (Included in above).....	1,300	55.3	113	88	124	101	122	90	114	127	90	107	118	106
3	Typhoid fever.....	572	24.3	25	35	24	32	27	30	24	55	96	117	76	31
4	Measles.....	131	5.6	8	9	24	21	21	14	17	8	5	5	2	2
5	Scarlet fever.....	91	3.9	11	11	14	8	5	4	2	5	4	6	5	16
6	Whooping cough.....	282	12.0	13	13	19	28	24	26	40	36	36	15	13	19
7	Diphtheria and croup.....	456	19.4	58	43	35	31	30	27	22	25	32	57	49	47
8	Influenza.....	455	19.4	39	59	93	110	64	7	8	5	6	9	6	40
9	Other epidemic diseases.....	28	1.2	4	4	1	1	2	1	3	2	2	4	2	2
10	Malaria.....	175	7.4	9	8	9	10	8	17	14	17	37	30	11	5
11	Tuberculosis of lungs.....	2,153	91.6	186	195	202	213	208	167	147	174	145	182	152	182
12	Other forms of tuberculosis.....	673	28.6	54	62	69	63	62	65	53	54	50	50	47	44
13	Cancer.....	1,321	56.2	111	107	115	120	110	106	109	113	116	117	98	99
14	Rheumatism.....	205	8.7	16	19	16	22	16	19	16	9	20	14	21	17
15	Diabetes.....	187	8.0	12	19	17	10	20	13	11	11	15	21	22	16
16	Other general diseases.....	452	19.2	39	31	53	36	45	32	27	33	36	42	44	34
17	Simple meningitis.....	417	17.7	32	21	53	42	49	32	22	28	39	33	34	32
18	Cerebrospinal meningitis.....	254	10.8	16	14	18	28	20	30	26	24	27	21	13	17
19	Cerebral congest'n and hem.....	1,144	48.7	91	90	112	132	89	96	74	86	83	86	99	106
20	Paralysis.....	789	33.6	66	84	69	73	61	61	57	50	64	67	69	68
21	Convulsions of infants.....	516	22.0	53	33	49	56	51	41	42	36	47	30	39	39
22	Other nervous diseases.....	843	35.9	63	66	83	64	71	80	82	63	61	71	62	77
23	Organic heart disease.....	2,018	85.8	182	180	195	205	181	182	160	171	130	133	174	173
24	Other circulatory diseases.....	524	22.3	34	33	36	55	43	40	49	42	37	47	52	56
25	Bronchitis.....	643	27.4	76	63	80	70	63	36	38	27	30	39	60	61
26	Broncho-pneumonia.....	242	10.3	28	34	36	33	24	14	8	6	7	15	16	21
27	Pneumonia.....	1,865	76.8	222	234	275	238	213	88	49	43	64	81	136	162
28	Pleurisy.....	107	4.5	3	12	18	15	14	4	5	2	6	3	8	17
29	Other respiratory diseases.....	439	18.7	47	27	37	38	44	29	23	31	31	34	45	53
30	Stomach diseases.....	484	20.6	48	35	48	40	43	45	44	42	41	39	33	26
31	Infantile diarrhea.....	1,782	75.8	24	32	35	55	49	85	271	423	488	224	56	41
32	Diarrhea and enteritis.....	314	13.4	21	23	25	17	16	10	29	48	60	41	14	10
33	Dysentery.....	150	6.4	3	4	3	7	2	13	29	47	37	3	2	2
34	Liver diseases.....	477	20.3	24	30	55	42	54	48	26	39	51	32	36	40
35	Peritonitis.....	284	12.1	31	16	24	28	23	19	29	22	24	22	25	21
36	Iliac abscess.....	165	7.0	13	11	15	16	9	19	16	15	13	9	15	14
37	Other digestive diseases.....	450	19.1	47	32	33	34	37	35	38	35	44	40	34	41
38	Bright's disease.....	915	38.9	85	69	96	90	86	68	59	50	74	80	75	83
39	Other genito-urin'y diseases.....	537	22.9	60	42	55	40	44	40	35	45	38	44	39	55
40	Puerperal diseases.....	387	16.5	30	38	39	44	40	36	30	21	21	20	29	39
41	Skin diseases.....	227	9.7	14	11	26	20	22	16	19	12	19	21	19	28
42	Diseases locomotor system.....	90	3.8	7	8	4	11	11	10	10	9	11	4	1	4
43	Malformations.....	140	6.0	9	12	14	6	6	16	9	12	17	15	11	13
44	Diseases of infancy.....	1,170	49.8	74	91	99	118	107	66	86	111	119	109	87	103
45	Diseases of old age.....	658	28.0	72	61	53	71	56	56	45	43	46	52	50	53
46	Suicide.....	189	8.0	19	13	12	19	23	24	15	17	15	16	4	12
47	Accidents.....	1,455	61.9	82	97	108	112	135	121	158	148	134	113	130	117
48	Homicide.....	33	1.4	2	2	3	1	3	2	3	4	6	1	6	6
49	Causes ill-defined.....	1,347	57.3	109	115	134	126	94	101	86	103	108	129	124	118

CAUSES OF DEATH.

lxxvii

for the State and geographical sections, 1898. STATE.

Ages of decedents, 1898.																							Line number.	
Ages in years under five.					Ages by five-year periods.																			
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.		
6,796	1,065	452	317	218	8,848	733	562	916	1,203	1,089	972	1,062	1,080	973	1,170	1,317	1,475	1,832	1,987	1,874	2,394	47	1	
1,300					1,300																		2	
2	4	5	2	1	14	39	54	76	102	70	53	35	27	36	17	15	11	7	7	8	1		3	
35	28	8	12	2	85	13	9	8	6	3	1	2	2	1				1					4	
7	11	11	7	17	53	25	8	2	1		1	1											5	
170	69	16	13	3	271	10			1														6	
35	58	47	46	47	233	134	54	15	5	5	5		1	1	3								7	
48	10	2	4	3	67	7	4	6	7	3	8	8	6	11	13	13	28	40	66	63	104	1	8	
6	2		1	2	11	3	1	4	2	1	1		1	2			1	1					9	
11	2	2	4	4	23	10	5	14	20	7	8	4	7	8	9	8	10	8	12	10	12		10	
18	17	7	6		48	15	43	207	356	285	239	201	155	117	117	103	87	75	58	25	20		11	
68	30	17	11	6	132	29	15	52	81	71	47	46	33	27	36	32	20	26	10	9	6		12	
4	3	3	2	3	15	6	2	7	9	19	31	63	92	93	142	183	175	164	154	85	79	2	13	
2	1		1	1	5	8	11	8	9	5	11	12	5	9	12	12	18	21	29	18	12		14	
61	8	2	1	3	75	7	17	12	19	35	37	41	38	28	30	23	19	21	20	16	11	3	15	
134	70	19	15	12	250	39	20	19	11	10	10	7	11	8	5	5	3	7	6	3	2		16	
81	30	22	14	6	153	28	19	15	11	8	7	6	2	1	1	2							17	
64	11	6	4	4	89	4	7	8	10	21	19	29	35	49	72	93	128	153	152	140	135		18	
3	3				6	7	3	3		5	3	11	19	17	35	40	64	115	137	144	178		19	
444	41	16	7	6	514	2			35	31	23	33	60	55	46	61	51	61	66	70	53		20	
78	17	12	5	5	117	29	25	25	35	31	23	33	60	55	46	61	51	61	66	70	53		21	
97	2	3	3	1	106	13	24	34	24	39	37	56	68	84	121	160	204	244	298	290	210	4	22	
25	1	1	2	2	31	12	7	11	12	17	11	25	21	22	27	43	56	68	64	57	38		23	
229	66	17	5	3	320	6	2	3	4	2	2	8	8	12	14	19	25	39	62	47	70		24	
118	24	13	10	2	167	12	1	2	2	2	1	1	2	2	4	4	4	7	16	10	7		25	
364	145	42	26	16	593	56	25	51	60	60	54	61	59	60	70	76	89	114	123	132	119	3	26	
1	3	1	1		6	2	2	4	6	6	5	6	9	7	6	7	16	9	5	5	6		27	
78	13	3	7	3	104	9	3	6	14	14	8	11	19	11	24	19	33	40	52	31	39		28	
95	10	5	1	1	112	11	1	3	7	6	18	12	22	17	32	30	31	58	40	43	41		29	
1,369	264	87	42	17	1,779	3																	30	
5	3	2			10	10	7	11	8	8	8	7	7	10	11	18	27	34	38	29	71		31	
23	11	10	6	2	52	3		2	1	2	1	1	2	3	4	8	4	10	12	21	23		32	
16	4	4	2		26	2	3	5	4	12	11	17	27	38	44	54	47	67	59	35	26		33	
20	7	6	1	5	39	13	17	27	31	35	30	15	10	8	4	9	10	12	12	8	4		34	
86	13	7	5	6	117	24	5	16	17	10	7	20	13	22	24	27	21	31	31	21	43		35	
7	2	1	4	3	17	8	7	14	25	22	31	41	40	50	70	64	102	126	124	103	69		36	
13	4	2	1	1	21	4	5	14	22	32	24	33	22	24	19	36	26	59	53	60	81		37	
									38	84	84	81	63	35	2									38
37	5	3	2	3	50	1	3	5	6	4	3	1	10	4	9	10	16	22	21	28	34		39	
11	2				13	7	4	6	9	4	2	4	3	5	7	8	1	7	5	5			40	
129	1	3	2	1	136			2		1													41	
1,144	18	6	1		1,169	1																	42	
																	1	5	20	55	116	460		43
1(a)					1			8	8	12	11	15	28	24	23	16	15	10	10	2	4		246	
51	37	38	36	22	184	89	85	127	127	97	83	106	91	64	60	41	51	50	37	54	102		747	
4	1				5		1	4	4	3		8	2	1	1	2			1				148	
302	14	1	4	1	322	10	13	8	15	15	16	32	24	28	41	61	54	81	127	170	326		449	

Table 20.—CONTINUED.—*Causes of death in Michigan, by months and ages, for the*

Line number.	Causes of death, 1898.	Total deaths, 1898.	Rate per 100,000 estimated reporting population.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	ALL CAUSES.....	2,665	1,260.6	188	177	216	233	233	205	205	251	275	243	209	230
2	Stillbirths (included in above).....	149	70.5	16	13	18	10	16	12	8	11	10	7	15	13
3	Typhoid fever.....	42	19.9	-----	2	4	2	1	4	-----	4	11	10	2	2
4	Measles.....	30	14.2	1	-----	2	3	3	5	6	2	-----	4	2	2
5	Scarlet fever.....	4	1.9	-----	1	-----	1	-----	1	-----	-----	-----	-----	-----	1
6	Whooping cough.....	38	18.0	-----	2	4	4	5	4	4	4	3	2	2	4
7	Diphtheria and croup.....	63	29.8	7	3	8	11	6	3	5	3	3	7	5	2
8	Influenza.....	13	6.1	2	1	2	3	2	-----	1	1	-----	-----	-----	1
9	Other epidemic diseases.....	5	2.4	-----	-----	1	-----	-----	-----	2	-----	-----	2	-----	-----
10	Malaria.....	9	4.3	1	1	-----	-----	-----	-----	-----	-----	7	-----	-----	-----
11	Tuberculosis of lungs.....	183	86.6	10	16	15	13	23	15	14	9	10	19	15	24
12	Other forms of tuberculosis.....	70	33.1	6	5	8	6	4	7	3	7	6	5	9	4
13	Cancer.....	99	46.8	8	12	11	8	8	11	7	2	8	11	7	6
14	Rheumatism.....	4	1.9	-----	-----	-----	-----	-----	1	1	-----	-----	2	-----	-----
15	Diabetes.....	9	4.3	1	-----	3	-----	1	-----	-----	-----	1	1	1	-----
16	Other general diseases.....	42	19.9	5	1	3	4	1	7	5	4	2	1	4	5
17	Simple meningitis.....	56	26.5	4	1	6	4	5	4	3	6	6	6	7	4
18	Cerebrospinal meningitis.....	30	14.2	1	-----	1	7	-----	4	3	4	2	2	3	3
19	Cerebral congest'n and hem.....	61	28.9	1	5	11	8	4	4	6	7	4	1	5	5
20	Paralysis.....	11	5.2	2	-----	-----	1	1	-----	1	2	1	1	-----	2
21	Convulsions of infants.....	61	28.9	6	4	6	9	4	7	3	3	3	5	5	6
22	Other nervous diseases.....	46	21.8	5	3	4	1	3	4	3	2	6	9	3	3
23	Organic heart disease.....	93	44.0	5	9	5	11	9	4	8	8	7	7	14	6
24	Other circulatory diseases.....	26	12.3	2	3	1	3	-----	1	2	1	3	3	4	3
25	Bronchitis.....	96	45.4	11	3	7	7	17	8	6	3	7	9	11	7
26	Broncho-pneumonia.....	55	26.0	4	5	4	5	6	6	2	2	-----	6	7	8
27	Pneumonia.....	150	71.0	15	12	17	20	11	12	8	4	6	11	17	17
28	Pleurisy.....	8	3.8	2	1	-----	-----	-----	3	3	-----	1	-----	-----	1
29	Other respiratory diseases.....	29	13.7	4	2	1	1	3	3	2	3	2	3	2	3
30	Stomach diseases.....	34	16.1	1	2	3	2	5	6	3	5	2	1	3	1
31	Infantile diarrhea.....	273	129.1	2	7	2	11	8	14	25	86	75	29	6	8
32	Diarrhea and enteritis.....	22	10.4	1	1	2	4	1	-----	2	5	3	1	-----	2
33	Dysentery.....	5	2.4	1	-----	-----	1	-----	-----	-----	1	2	-----	-----	-----
34	Liver diseases.....	29	13.7	3	-----	2	3	4	4	2	3	3	4	-----	1
35	Peritonitis.....	18	8.5	2	-----	1	3	4	-----	1	1	1	2	1	2
36	Iliac abscess.....	15	7.1	1	3	-----	2	-----	1	1	1	2	-----	1	3
37	Other digestive diseases.....	35	16.6	3	1	-----	4	6	2	1	2	5	6	1	4
38	Bright's disease.....	61	28.9	6	4	4	7	6	6	2	2	5	7	7	5
39	Other genito-urin'ry diseases.....	29	13.7	4	3	4	1	4	3	-----	1	1	2	1	5
40	Puerperal diseases.....	54	25.5	3	5	3	4	6	3	7	3	2	6	5	7
41	Skin diseases.....	9	4.3	1	-----	-----	-----	1	2	1	1	-----	-----	-----	3
42	Diseases locomotor system.....	6	2.8	1	-----	-----	1	-----	1	-----	1	1	1	-----	-----
43	Malformations.....	9	4.3	1	-----	1	1	1	-----	1	-----	1	-----	1	2
44	Diseases of infancy.....	188	88.9	14	18	19	15	17	8	20	18	21	10	10	18
45	Diseases of old age.....	29	13.7	3	-----	1	6	3	2	3	1	2	4	-----	4
46	Suicide.....	11	5.2	3	-----	1	-----	1	1	-----	1	-----	2	-----	2
47	Accidents.....	232	109.7	11	19	17	14	21	16	22	17	30	26	22	17
48	Homicide.....	3	1.4	1	-----	1	-----	-----	-----	-----	-----	-----	-----	-----	1
49	Causes ill-defined.....	121	57.2	9	8	12	12	12	9	7	10	10	8	11	13

CAUSES OF DEATH.

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State and geographical sections, 1898. I.—UPPER PENINSULAR COUNTIES.

Ages of decedents, 1898.																								
Ages in years under five.					Ages by five-year periods.																		Line number.	
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.		
989	158	68	49	33	1,297	78	51	81	135	114	117	123	85	96	82	68	77	62	72	57	62	8	1	
149					149																	2		
6	14	4	3		3	2	5	2	9	8	8	2	1		2								3	
	1			2	27	2	1																4	
20	10	2	3	1	36	1			1														5	
5	13	4	10	8	40	17	4	1	1														6	
3	1			1	5	1							1	1	1				2	1	1		7	
					4						1												8	
2	4	1	1		8	2	4	1	2	3	2	21	8	9	14	3	6	4	1	2	1	1	9	
12	2	5	3	1	23	6	4	25	29	28	3	4	2	3	2	4	4	1					10	
	1				2	2		3	7	6	3	1	9	4	21	12	13	13	7	4	4	1	11	
							1	2									1						12	
3	1			1	5	1	3	1	1	1	1	1		1					1	1	1		13	
26	10	6	3	1	46	2				1	2	1	1	1	1								14	
12	3	1	2	2	20	2	3	2		1	1							1					15	
8		1	1		10			1	1		2	3	2	7	4	3	8	5	8	5	2		16	
												1			2	2	2	1	1	2			17	
53	5	1	1	1	61							4	4	2	1	3	1	3					18	
10	1	2		1	14	4	1	1	4	1											1		19	
6			1		7	3	2	3	2	2	4	4	8	7	8	10	8	5	7	10	2	1	20	
2			1	1	4	1			2	3	1	1	1	1	3	1		4		3	1		21	
55	19	5			79	1						1		1	1	1	1	2	6	3			22	
35	8	5	3	1	52													1					23	
32	16	7	6	2	63	11	3	2	6	4	5	4	7	6	4	6	7	3	8	2	9		24	
		1	1		1	1	1			1				3			1						25	
6	1	1	1	1	10							1	1	1	4	2	2	2	4		2		26	
10	2	2			14	1			2	1	3	2	1	1		2		3	1	1	2		27	
233	32	7		1	273	1	1	1	1	2		1	2	3		1	2		3	1	2		28	
1					1																		29	
3					3		1				2	1	2	2	5	3	3						30	
1		1	1		3		1				1	1	1	1		1							31	
1	1	1			3		1	3	3	3	1	1	2	1		1							32	
13	1	1		1	16	2	1	1	5	3	1		3	2	1	1	1		1	1	2		33	
																							34	
2			1	1	4	1	2		3		2	6	2	7	5	2	9	7	7	2	2		35	
	1				1	1			2	1	3	2	2	3	1	1	1	3	3	2	3		36	
								4	10	10	16	10	4										37	
4					4			1									2		1	1			38	
2	1				3			1	1			1											39	
7		1	1		9																		40	
183	2	3			188																		41	
																							42	
																							43	
																							44	
																							45	
																							46	
10	5	3	3	5	26	10	10	12	36	29	25	27	21	10	8	5	4	1	1		3	3	47	
												1		1								1	48	
71	3		2	1	77	1	1	1	1	2	4	2	1	3	1	5		3	1	7	11		49	

Table 20.—CONTINUED.—*Causes of death in Michigan, by months and ages, for the*

Line number.	Causes of death, 1898.	Total deaths, 1898.	Rate per 100,000 estimated reporting population.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	ALL CAUSES.....	2,960	1,103.0	241	224	267	263	236	223	221	284	303	240	216	242
2	Stillbirths (included in above).....	146	54.4	13	8	15	13	14	12	15	13	13	5	16	9
3	Typhoid fever.....	52	19.4	3	3	1	1	3	5	1	2	8	15	9	1
4	Measles.....	22	8.2	4	—	2	4	7	1	3	1	—	—	—	—
5	Scarlet fever.....	21	7.8	4	5	5	3	—	2	—	1	—	1	—	—
6	Whooping cough.....	23	8.6	2	1	1	1	3	2	2	4	1	—	1	5
7	Diphtheria and croup.....	61	22.7	8	5	4	—	5	12	5	4	—	3	9	6
8	Influenza.....	41	15.3	5	6	13	5	2	3	1	1	—	—	—	5
9	Other epidemic diseases.....	3	1.1	—	—	—	1	1	—	—	—	—	—	—	1
10	Malaria.....	13	4.8	1	1	—	1	2	1	—	2	2	1	1	—
11	Tuberculosis of lungs.....	208	77.5	16	15	19	23	21	18	16	19	6	17	21	17
12	Other forms of tuberculosis.....	55	20.5	4	5	2	6	2	6	5	5	6	7	5	2
13	Cancer.....	80	29.8	9	8	10	4	7	7	4	10	5	6	5	5
14	Rheumatism.....	19	7.1	1	1	3	3	—	—	1	1	3	3	2	1
15	Diabetes.....	18	6.7	2	2	—	—	4	1	—	1	1	2	3	—
16	Other general diseases.....	35	13.0	4	2	1	3	6	1	2	5	3	1	3	4
17	Simple meningitis.....	30	11.2	2	1	2	2	3	3	2	2	5	1	4	3
18	Cerebrospinal meningitis.....	23	8.6	1	2	—	3	1	5	3	4	—	1	—	3
19	Cerebral congest'n and hem.....	61	22.7	7	3	3	7	5	5	8	4	6	2	4	7
20	Paralysis.....	64	23.8	4	8	3	5	3	8	3	3	8	8	3	8
21	Convulsions of infants.....	54	20.1	5	4	4	5	4	2	3	6	6	4	6	5
22	Other nervous diseases.....	74	27.6	6	7	7	5	9	6	6	8	2	8	3	7
23	Organic heart disease.....	164	61.1	15	15	13	14	13	15	16	16	15	7	9	16
24	Other circulatory diseases.....	45	16.8	1	2	3	3	2	4	9	6	4	4	2	5
25	Bronchitis.....	73	27.2	9	11	8	6	3	4	3	4	4	5	7	9
26	Broncho-pneumonia.....	26	9.6	3	4	4	3	—	—	—	2	—	4	4	2
27	Pneumonia.....	168	62.6	27	22	23	20	21	5	4	3	5	11	8	19
28	Pleurisy.....	2	0.7	1	—	—	1	1	—	—	—	—	—	—	—
29	Other respiratory diseases.....	34	12.7	2	—	2	1	3	1	3	5	4	2	5	6
30	Stomach diseases.....	52	19.4	7	5	7	2	—	7	1	4	9	2	6	2
31	Infantile diarrhea.....	233	86.8	4	2	7	9	11	9	24	52	77	29	5	4
32	Diarrhea and enteritis.....	40	14.9	4	5	1	1	4	5	4	8	6	2	—	—
33	Dysentery.....	26	9.6	—	1	—	2	—	3	8	6	6	—	—	—
34	Liver diseases.....	50	18.6	3	2	4	4	8	8	3	1	5	3	4	5
35	Peritonitis.....	26	9.6	1	2	4	2	1	3	3	3	4	—	2	4
36	Iliac abscess.....	12	4.5	1	—	1	1	1	1	—	2	2	1	1	1
37	Other digestive diseases.....	43	16.0	4	3	4	5	3	—	6	2	2	6	6	2
38	Bright's disease.....	58	21.6	7	5	5	5	2	5	2	4	7	6	4	6
39	Other genito-urin'y diseases.....	40	14.9	4	4	8	4	1	—	2	1	3	2	4	7
40	Puerperal diseases.....	61	22.7	4	7	6	13	3	8	3	4	3	3	3	4
41	Skin diseases.....	22	8.2	—	1	2	2	5	3	1	1	2	2	1	2
42	Diseases locomotor system.....	8	3.0	1	—	—	1	—	—	—	2	—	1	—	1
43	Malformations.....	20	7.5	—	—	5	1	—	1	1	1	3	5	2	1
44	Diseases of infancy.....	129	48.1	8	7	13	11	15	7	8	13	14	9	9	15
45	Diseases of old age.....	85	31.7	6	8	7	11	7	6	6	4	7	6	10	7
46	Suicide.....	16	6.0	—	1	—	4	2	1	2	2	1	1	—	2
47	Accidents.....	199	74.2	9	11	14	21	18	19	22	20	20	16	14	15
48	Homicide.....	5	1.9	1	—	—	—	—	—	—	—	—	—	—	3
49	Causes ill-defined.....	220	82.0	19	18	29	21	11	13	12	22	23	22	15	15

CAUSES OF DEATH.

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State and geographical sections, 1898. II.—NORTHERN COUNTIES.

Ages of decedents, 1898.																						
Ages in years under five.					Ages by five-year periods.																	
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.
820	153	62	54	25	1,114	93	88	103	122	103	108	116	105	82	118	120	104	153	115	152	157	7
146					146																	
8	1	1			2	5	5	5	7	3	5	3	2	5	5	1	2		1	1		
1	6		4		18	1	1		1	1												
18	1	1	2	5	10	8	3															
8	4	4	7	2	22	1																
7	2			1	25	21	12	2	1	1												
1			1		10	1		1	1		1	2	1	2	2	1	3	1	3	5	7	
					2	1																
4	2	3	2	1	3	1	1	1	1		2		1		1	1		1				
8	2	2		1	11	3	7	19	35	24	26	25	15	10	9	13	1	3	2	3	1	1
1		1			13	2	1	4	6	9	2	6	1		5	4	1	1				
1					2				1	5	3	8	2	11	13	14	8	7	5	1		
4			1		2	1	1		1	3	3	1			1	1	3	1	2			
								2	2	1	3	3	1		1	2						
4	1				5		1	2	1	3	2	3	5	2	4	3		1	1	1	1	
9	4	3	2	1	19	6	2		1							1						1
4	6	5	3		18	1	1		1	1		1										
8	1		1	1	11		1	1	2	3			6	3	3	1	3	7	5	12	3	
													5	1	4	3	4	12	9	9	15	
47	3	3	1		54																	
11	4	2	1	2	20	1	4	2	6	2	5	3	7	5	5	3	4	1	3	2	1	
11					11		8	5	1	3	5	5	3	4	10	13	22	35	17	15	6	1
3	1	1			5	1	1	1		1		3	2	2	1	5	3	5	2	8	5	
34	13	2		1	50	1	1		1			1	2	1	2	1	3	3	2	3	2	
15	3	1	2		21	1			1		1				2			2				
44	22	9	2	3	80	4	4	3	7	6	6	9	7	5	7	5	5	5	5	6	3	1
									1						1							
6			1		7	1	1	1	3	1		1	1	2	1	3	1	5	4	1	1	
3	1	3			7	1		1			1	2	4	5	6	2	1	9	5	5	3	
155	49	13	10	6	233		2	3		2	4	1		2	2	2	3	3	3	7	4	
2																						
3	2	2	2		9										2	4	2	2		3	2	1
1	1	1			3		2		1	2	2		5	7	2	10	2	6	4	3	1	
						2	5	3	2	3	2	3		2	1		1					
10	3	2			15	2		3	1	1		2	5	1	3	1	1	2	2	1	2	
						2		4	2	2	2	3	2	3	6	4	4	9	6	6	3	
	1		1		2	1			2	3	2	2	2	1	2	3	4	5	4	3	4	
									12	10	11	12	11	5								
6	2				8				1	1	2				1		1	2		4	2	
1					1	1									1							
20					20											3			1			
125	3		1		129																	
																		1	4	7	20	53
4	9	3	7		23	19	15	22	21	12	9	16	13	8	11	5	6	5	3	7	4	
1					1			1				2										
90	2		2		94	2	5	3	4	2	1	3	1	5	6	12	4	14	13	19	31	1

Table 20.—CONTINUED.—Causes of death in Michigan, by months and ages, for the

Line number.	Causes of death, 1898.	Total deaths, 1898.	Rate per 100,000 estimated reporting population.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	ALL CAUSES.....	5,002	1,108.7	421	405	496	454	429	386	333	389	521	422	345	401
2	Stillbirths (included in above).....	198	43.9	16	18	20	13	20	8	18	15	27	13	18	18
3	Typhoid fever.....	120	26.6	3	7	4	6	9	3	1	7	18	26	21	15
4	Measles.....	44	9.8	2	4	13	5	3	6	6	4	1	1	1	2
5	Scarlet fever.....	8	1.8	—	—	—	2	1	—	—	—	1	1	—	—
6	Whooping cough.....	69	15.3	3	—	2	10	5	9	12	5	10	6	4	3
7	Diphtheria and croup.....	74	16.4	15	11	6	3	2	2	2	5	5	9	7	7
8	Influenza.....	63	14.0	6	10	7	12	13	—	1	1	2	2	2	7
9	Other epidemic diseases.....	5	1.1	—	1	—	—	—	—	—	1	1	1	—	1
10	Malaria.....	32	7.1	—	2	3	1	—	5	4	—	5	3	3	2
11	Tuberculosis of lungs.....	369	81.8	37	31	41	35	31	28	24	26	36	29	19	32
12	Other forms of tuberculosis.....	113	25.0	11	9	14	11	11	11	5	7	13	9	4	8
13	Cancer.....	230	51.0	19	17	17	17	17	30	19	20	18	21	14	21
14	Rheumatism.....	50	11.1	6	3	1	7	6	9	3	2	4	2	4	3
15	Diabetes.....	32	7.1	2	1	4	2	1	3	—	5	2	4	5	3
16	Other general diseases.....	72	16.0	7	2	16	5	3	3	3	5	5	10	9	4
17	Simple meningitis.....	67	14.9	9	4	13	10	12	6	2	2	2	4	2	1
18	Cerebrospinal meningitis.....	48	10.6	4	3	6	4	3	3	5	3	6	7	4	—
19	Cerebral congestion and hem.	206	45.7	18	18	30	25	13	20	14	12	9	13	15	16
20	Paralysis.....	111	24.6	8	15	6	10	8	10	4	9	8	12	17	4
21	Convulsions of infants.....	79	17.5	6	6	10	10	5	8	8	6	3	8	6	3
22	Other nervous diseases.....	140	31.0	10	17	19	7	14	16	9	8	13	9	8	10
23	Organic heart disease.....	334	74.0	29	35	28	37	31	18	20	37	22	21	20	35
24	Other circulatory diseases.....	66	14.6	5	4	5	3	5	6	5	4	7	10	5	7
25	Bronchitis.....	97	21.6	12	16	12	11	7	3	4	3	4	4	11	10
26	Broncho-pneumonia.....	36	8.0	4	4	8	6	4	2	—	—	2	1	1	4
27	Pneumonia.....	287	63.6	37	40	41	43	37	19	9	6	3	9	17	26
28	Pleurisy.....	16	3.5	2	3	2	1	1	1	1	—	—	—	3	3
29	Other respiratory diseases.....	69	15.3	9	6	5	5	9	5	4	4	8	6	5	3
30	Stomach diseases.....	85	18.8	11	6	5	8	10	6	7	5	11	6	6	4
31	Infantile diarrhea.....	311	68.9	4	6	4	13	10	7	20	69	119	42	7	10
32	Diarrhea and enteritis.....	44	9.8	3	1	2	—	1	1	5	3	16	8	2	2
33	Dysentery.....	22	4.9	—	1	—	1	—	—	1	3	8	7	—	1
34	Liver diseases.....	79	17.5	3	3	11	5	8	6	5	11	8	5	5	9
35	Peritonitis.....	42	9.3	2	3	2	4	4	4	6	4	3	5	3	2
36	Iliac abscess.....	24	5.3	1	1	1	4	1	6	5	1	1	2	—	1
37	Other digestive diseases.....	89	19.7	12	4	5	3	10	6	5	6	15	11	4	8
38	Bright's disease.....	150	33.2	12	12	16	16	17	12	10	11	14	10	8	12
39	Other genito-urinary diseases.....	97	21.6	14	6	13	6	7	10	9	9	6	6	4	7
40	Puerperal diseases.....	95	21.1	11	7	11	9	11	12	4	3	6	3	10	8
41	Skin diseases.....	48	10.6	3	2	5	9	4	2	7	—	1	3	4	8
42	Diseases locomotor system.....	14	3.1	1	2	—	2	3	1	1	2	1	—	—	1
43	Malformations.....	33	7.3	2	4	3	1	—	4	4	1	4	4	2	4
44	Diseases of infancy.....	166	36.8	10	15	15	17	10	8	15	16	16	17	15	12
45	Diseases of old age.....	113	25.0	13	6	11	9	8	12	8	9	6	11	8	12
46	Suicide.....	37	8.2	4	—	4	2	7	7	3	—	6	2	—	2
47	Accidents.....	249	55.2	9	18	29	17	31	18	20	20	31	17	17	22
48	Homicide.....	6	1.3	—	—	—	—	—	2	2	—	—	1	—	1
49	Causes ill-defined.....	263	58.3	28	22	23	28	16	28	13	15	21	21	22	26

CAUSES OF DEATH.

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State and geographical sections, 1898. III.—CENTRAL COUNTIES.

Ages of decedents, 1898.																								
Ages in years under five.					Ages by five-year periods.																			
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.	Line number.	
1,110	199	91	48	41	1,489	126	113	199	232	180	153	176	177	147	232	259	239	325	292	305	352	6	2	
198					198																			
1	1			1	3	6	22	20	17	9	7	10	5	6	3	2	2	4	1	1	2	1	3	
13	4	2	4	1	24	4	5	6	2			1	1									4		
42	15	4	3		64	5																5		
6	8	5	4	9	32	22	8	8	1	1	2											6		
7	2			1	10	1		1	1	1	1	1	2	1	2	4	2	6	11	5	14	7		
1					1			1	1									1				8		
2		2		1	5	4	1	2	1			1	1	3	2	2	4	2	2	2		9		
3	2	1			6	3	6	43	76	37	35	35	26	21	19	18	17	12	9	5	1	10		
8	6	3			17	3	2	9	15	12	13	10	6	4	4	3	4	3	2	3		11		
1	1	1	1		4			1	2	2	3	4	2	2	13	37	36	23	35	28	10	12		
						1	2	1		1	4	4	2	1	5	6	4	4	9	8	1	13		
						3	2	5		1	2	1	2		3	2	3	3	2	2	2	14		
6	4				10	2	4	2	10	6	7	3	4	3	5	4	2	2	2	2	3	15		
21	15	2	1	3	42	5	4	3	5	2	2	2		1		1						16		
19	6	5	2	2	34	4	4	1	2	1		1										17		
13	2	2	2	1	20		2	1		8	4	5	2	5	15	26	22	28	27	18	23	18		
1					1							2	5	2	5	10	11	22	10	23	19	19		
66	5	6	1	1	79																	20		
20	5	4	2		31	6	2	5	6	6	1	5	7	12	7	9	8	11	7	10	7	21		
16	1	1	1	1	20		4	6	2	7	8	10	12	14	22	35	45	29	41	52	27	22		
4				1	5		2		1	2		3	3	5	4	4	11	12	7	5	1	23		
34	8		1		43			2	1			3		3	2	6	5	4	9	8	11	24		
21	1	2	1		25	1			1						1	3			2	1	2	25		
51	27	2	4	3	87	8	4	13	10	12	8	9	8	9	15	14	13	23	12	28	19	26		
1					1			1	4			2	2	1	4	4	6	5	5	1	7	27		
14	2		1		17	1	1	3	4	5	2	2	1	1	4	4	6	5	5	1	7	28		
22	1				23	3	1	2	2		2			4	4	5	6	7	10	4	7	29		
217	59	26	7	2	311																	30		
1	1				2	5	2	1	3		2			1		1	2	1	5	5	3	31		
3	4	2		2	11	2								2		1	1	1	2	1	1	32		
2	1	1	1		5	1		1		1	2	6	5	8	6	6	7	16	7	4	4	33		
1	2	1		3	7	3	3	6	4	3	5	2	2	1	1	2	1	1	1			34		
19	3	2			3	4	3	3	2	2	1	1	3	2	1	1	1	1				35		
					24	6		2	7	2	2	4		1	8	7	3	9	4	3	7	36		
2		1	1	1	5	2	1	3	6	6	7	5	7	6	9	8	17	19	14	28	7	37		
4					4		2	5	8	6	4	4	4	4	7	7	3	14	9	8	8	38		
								10	22	25	12	16	10									39		
9	1	2		1	13		1	2		1		1	4		5	2	2	3	6	5	3	40		
3	1				4	1		1	3					1				1	1	1		41		
29		1		1	31			1														42		
166					166																	43		
																						44		
																1		4	11	17	79	45		
12	6		11	6	46	17	22	1	3	4	1	3	7	2	6	5	1	2	1		1	46		
1	1				2		1	25	10	11	15	14	12	7	12	6	8	10	5	13	16	47		
												2										48		
50	2				52	1	1	2	1	4	4	5	5	7	11	14	9	14	36	36	60	49		

TABLE 20.—CONCLUDED.—*Causes of death in Michigan, by months and ages, for the*

Line number.	Causes of death, 1898.	Total deaths, 1898.	Rate per 100,000 estimated reporting population.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	ALL CAUSES.....	18,847	1,328.2	1,535	1,530	1,778	1,801	1,647	1,305	1,503	1,586	1,586	1,584	1,488	1,504
2	Stillbirths (included in above).....	807	56.9	68	49	71	65	72	58	73	88	46	82	69	66
3	Typhoid fever.....	358	25.2	19	23	15	23	14	18	22	42	59	66	44	13
4	Measles.....	35	2.5	1	5	7	9	8	2	2	1	1	1	1	1
5	Scarlet fever.....	58	4.1	7	5	7	4	4	1	2	4	3	4	4	13
6	Whooping cough.....	152	10.7	8	10	12	13	11	11	22	23	22	7	6	7
7	Diphtheria and croup.....	258	18.2	28	24	17	17	17	10	10	13	24	38	28	32
8	Influenza.....	398	23.8	26	42	71	90	47	4	5	2	4	7	4	36
9	Other epidemic diseases.....	15	1.1	4	3	-----	-----	1	1	1	1	1	1	2	-----
10	Malaria.....	121	8.5	7	4	6	8	7	10	9	11	23	26	7	3
11	Tuberculosis of lungs.....	1,393	98.2	123	133	127	142	133	106	93	120	98	117	97	109
12	Other forms of tuberculosis.....	435	30.7	33	43	45	40	45	41	40	35	25	29	30	30
13	Cancer.....	912	64.3	75	70	77	91	78	58	79	81	85	79	72	67
14	Rheumatism.....	132	9.3	9	15	12	12	10	9	11	6	13	7	15	13
15	Diabetes.....	128	9.0	7	16	8	8	14	9	10	5	11	14	13	13
16	Other general diseases.....	303	21.4	23	26	33	24	35	21	17	19	26	30	28	21
17	Simple meningitis.....	264	18.6	17	15	32	26	29	19	15	18	26	22	21	24
18	Cerebrospinal meningitis.....	153	10.8	10	9	11	14	16	18	15	13	19	11	6	11
19	Cerebral congest'n and hem.	816	57.5	65	64	68	92	67	67	46	63	64	70	72	78
20	Paralysis.....	603	42.5	52	61	60	57	49	43	49	36	47	46	49	54
21	Convulsions of infants.....	322	22.7	36	19	29	32	38	24	28	21	35	13	22	25
22	Other nervous diseases.....	583	41.1	42	39	53	51	45	54	64	45	40	45	48	57
23	Organic heart disease.....	1,425	100.4	133	121	149	143	128	95	116	110	86	98	131	115
24	Other circulatory diseases.....	387	27.3	26	24	27	46	36	29	33	31	23	30	41	41
25	Bronchitis.....	377	26.6	44	33	53	46	36	21	25	17	15	21	31	35
26	Broncho-pneumonia.....	125	8.8	17	21	20	19	14	6	6	2	5	4	4	7
27	Pneumonia.....	1,200	84.6	143	160	194	155	144	52	28	30	50	50	94	100
28	Pleurisy.....	81	5.7	3	8	14	12	12	3	1	2	5	3	5	13
29	Other respiratory diseases.....	307	21.6	32	19	29	31	29	20	14	19	17	23	33	41
30	Stomach diseases.....	313	22.1	29	22	33	28	28	26	33	28	19	30	18	19
31	Infantile diarrhea.....	965	68.0	14	17	22	22	20	55	202	216	217	124	37	19
32	Diarrhea and enteritis.....	208	14.7	13	16	20	12	10	4	18	32	35	30	12	6
33	Dysentery.....	97	6.8	2	2	3	3	2	-----	9	17	31	24	3	1
34	Liver diseases.....	319	22.5	15	25	38	30	34	30	16	24	35	20	27	25
35	Peritonitis.....	198	14.0	26	11	17	19	14	15	19	14	16	15	19	13
36	Iliac abscess.....	114	8.0	10	7	13	9	7	11	10	11	8	6	13	9
37	Other digestive diseases.....	283	19.9	28	24	24	22	18	27	26	25	22	17	23	27
38	Bright's disease.....	646	45.5	60	48	71	62	61	45	45	33	48	57	56	60
39	Other genito-urin'ry diseases.....	371	26.1	38	29	30	29	32	27	24	34	28	34	30	36
40	Puerperal diseases.....	177	12.5	12	19	19	18	20	13	16	11	10	8	11	20
41	Skin diseases.....	148	10.4	10	8	19	9	12	9	10	10	16	16	14	15
42	Diseases locomotor system.....	62	4.4	4	6	4	7	8	8	7	6	7	2	1	2
43	Malformations.....	78	5.5	6	8	5	3	5	11	3	10	9	6	6	6
44	Diseases of infancy.....	687	48.4	42	51	52	75	65	43	43	64	68	73	53	58
45	Diseases of old age.....	431	30.4	50	47	34	45	38	36	28	29	31	31	32	30
46	Suicide.....	125	8.8	12	12	7	13	13	15	10	14	8	11	4	6
47	Accidents.....	775	54.6	53	49	48	60	65	68	94	91	53	54	77	63
48	Homicide.....	19	1.3	-----	1	2	-----	1	1	-----	3	4	5	1	1
49	Causes ill-defined.....	743	52.4	53	67	70	65	55	51	51	56	54	78	76	64

CAUSES OF DEATH.

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State and geographical sections, 1898. IV.—SOUTHERN COUNTIES.

Ages of decedents, 1898.

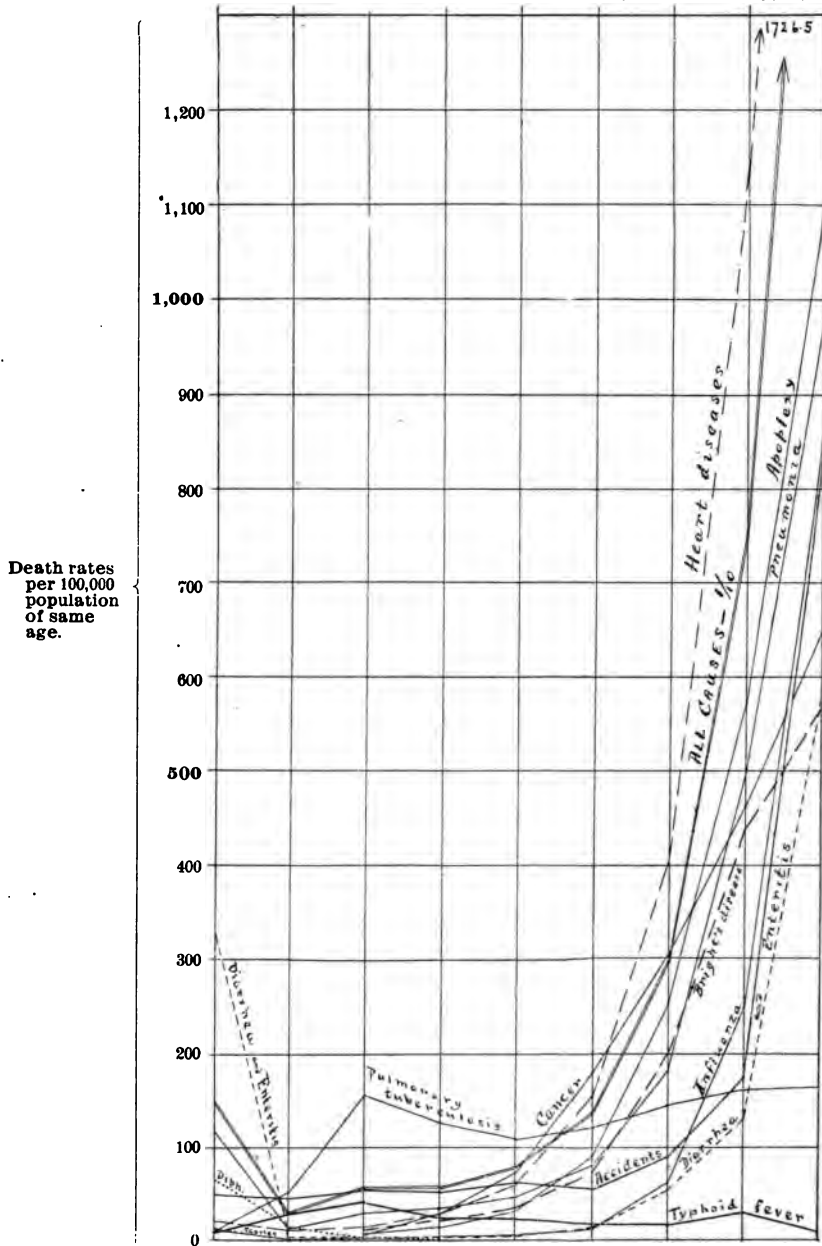
Ages in years under five.					Ages by five-year periods.																	Line number.	
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +		Unk.
3,877	555	231	166	119	4,948	436	300	533	714	692	594	647	663	648	738	870	1,055	1,292	1,508	1,360	1,823	26	1
807					807																		2
1	2	3			6	26	22	49	69	50	33	20	19	25		7	12	7	3	5	5		3
8	4	2	1	1	16	6	2	2	4	2			1	1	1								4
6	7	8	5	10	36	13	5	2	1			1											5
90	40	10	7	2	149	3																	6
16	33	34	25	28	136	74	30	4	3	3	3		1	1	3								7
31	6	1	4		42	4	4	4	5	2	6	5	2	7	8	8	23	33	50	52	82		8
1	1			2	4	2	1	3	1	1				2			1						9
9	2		2	2	15	5	3	10	16	4	4	3	5	5	6	5	6	5	10	8	11		10
9	9	2	3		23	7	26	120	216	196	156	120	106	77	75	69	63	59	45	16	18		11
40	20	7	8	4	79	18	8	34	53	44	29	26	24	20	20	24	14	22	8	6	5		12
2	1		1	3	7	4	2	3	6	14	22	47	60	57	82	121	125	114	115	66	65		13
1	1			1	3	6	7	7	6	4	4	7	3	9	6	6	10	12	18	16	8		14
					2	1	8	3	6	5	6	7	5	2	12	6	14	14	20	11	6		15
48	2	2	1	2	55	4	9	5	5	23	22	29	25	21	20	15	17	18	15	12	7		16
78	41	8	9	7	143	26	14	16	5	7	6	4	10	6	4	3	3	6	6	3	2		17
46	15	11	7	2	81	21	11	12	8	5	6	4	2	1	1	1							18
35	8	3		2	48	4	4	5	7	10	13	21	25	34	50	63	95	113	112	105	107		19
2	3				5	6	2	3		5	3	8	9	14	24	25	47	80	117	110	144		20
278	28	6	4	4	320	2																	21
37	7	4	2	2	58	18	18	17	19	22	17	21	42	36	33	46	38	46	56	57	44		22
64	1	2	1		68	10	10	20	19	27	20	37	45	59	81	102	129	175	233	213	175		23
16			1		17	10	4	10	9	11	10	18	15	14	19	33	42	47	55	41	31		24
106	26	10	4	2	148	4	1	1	2	2	2	3	6	7	9	11	16	30	45	33	57		25
47	12	5	4	1	69	10	1	2	1	1		1	1	1	4	3	5	13	8	5			26
237	80	24	14	8	363	33	14	33	37	38	40	39	37	40	44	51	64	83	98	96	88		27
	3				4	1	1	3	2	4	4	4	4	7	6	6	15	5	4	5	6		28
52	10	2	4	2	70	7	1	2	7	8	6	7	16	7	15	10	24	28	39	29	29		29
60	6		1	1	68	6			3	5	12	8	13	7	21	20	23	36	30	30	31		30
764	124	41	25	8	962	3																	31
1	2	2			5	4	2	6	4	4	2	5	4	5	8	13	21	26	27	18	54		32
14	5	6	4		29	1		2	1	2		1		3	1	3	1	7	10	16	20		33
12	2	1			15	1		4	3	9	5	10	15	21	31	35	35	41	47	26	21		34
18	4	4	1	2	29	8	8	15	22	26	22	9	7	5	2	6	8	11	11	5	4		35
					5	13	21	13	14	11	9	6	5	4	3	2	3	3	1				36
44	6	2	5	5	62	14	4	8	7	9	5	11	8	19	12	18	17	19	24	17	32		37
3	2		2	1	8	3	4	7	14	14	20	27	29	34	50	50	72	91	97	67	57		38
9	2	2		1	14	2	3	9	10	22	15	25	14	16	9	25	18	37	37	47	66		39
								12	42	38	41	26	16	2									40
18	2	1	2	2	25	1	2	2	5	2	1		6	4	3	6	13	17	14	18	29		41
5					5	5	4	4	5	3	2	3	2	4	6	5	1	6	3	4			42
73	1	1	1		76			1		1													43
670	13	3			686	1																	44
																	3	11	30	75	312		45
1					1			7	4	7	7	9	18	19	13	10	10	7	7	2	3		146
25	17	21	15	11	89	43	38	68	60	45	34	49	45	39	29	25	33	32	29	34	79		147
2					2			3	4	2		3	2		1	1				1			148
91	7	1			99	6	6	2	9	7	7	22	17	13	23	30	41	50	77	108	224		149

Table 21.—Causes of death in Michigan, 1898, showing death rates per 100,000 estimated population of same age period.

Line number.	Causes of death, 1898.	All ages, 1898, rate per 100,000.	Under 1 year.	Five-year periods.		Ten-year periods.									
				0 to 4.	5 to 9.	0 to 9.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.	
1	ALL CAUSES	1199.0	8847.5	2599.1	281.6	1,503.6	309.0	559.0	586.5	706.6	1378.3	2977.2	7483.1	19,682.6	
2	Stillbirths (not inc. in above) ..	55.3	2092.8	447.6	-----	236.0	-----	-----	-----	-----	-----	-----	-----	-----	
3	Typhoid fever	24.3	3.2	4.8	15.0	9.6	27.4	41.9	25.4	25.1	17.7	16.2	29.1	8.2	
4	Measles	5.6	56.3	25.3	5.0	17.8	3.6	2.2	0.9	1.2	-----	0.9	-----	-----	
5	Scarlet fever	3.9	11.3	18.2	9.6	14.2	2.1	0.2	0.6	-----	-----	-----	-----	-----	
6	Whooping cough	12.0	273.7	93.3	3.8	51.0	-----	0.2	-----	-----	-----	-----	-----	-----	
7	Diphtheria and croup	19.4	56.3	80.2	51.5	66.6	14.5	2.4	1.4	0.8	1.7	-----	-----	-----	
8	Influenza	19.4	77.3	23.1	2.7	13.4	2.1	2.4	4.6	6.8	14.4	61.2	250.0	855.1	
9	Other epidemic diseases	1.2	9.7	3.8	1.2	2.5	1.1	0.7	0.3	1.2	-----	1.8	-----	-----	
10	Malaria	7.4	17.7	7.9	3.8	6.0	4.0	6.6	3.5	6.0	9.4	16.2	42.6	98.7	
11	Tuberculosis of lungs	91.6	29.0	16.5	5.8	11.4	52.6	156.3	126.9	108.2	121.9	145.8	160.9	164.4	
12	Other forms of tuberculosis	28.6	109.5	45.5	11.1	29.2	14.1	37.1	26.8	23.9	37.7	41.4	36.8	49.3	
13	Cancer	56.2	6.4	5.2	2.3	3.8	1.9	6.8	27.1	73.6	180.1	305.2	463.2	649.5	
14	Rheumatism	8.7	3.2	1.7	3.1	2.4	4.0	3.4	6.6	5.6	13.3	35.1	91.1	98.7	
15	Diabetes	8.0	-----	0.7	1.9	1.3	4.6	4.4	5.8	4.0	13.3	35.1	77.5	57.6	
16	Other general diseases	19.2	98.2	25.8	2.7	14.9	6.1	13.2	22.5	26.2	29.4	36.1	69.8	90.4	
17	Simple meningitis	17.7	215.7	88.1	15.0	52.5	8.2	5.1	4.9	7.6	5.5	9.0	17.4	16.4	
18	Cerebrospinal meningitis	10.8	130.4	52.7	10.8	32.9	7.2	4.6	3.7	1.2	1.7	0.9	-----	-----	
19	Cerebral congest'n and hem.	48.7	103.0	30.6	1.5	16.9	3.2	7.6	13.8	33.4	91.4	253.0	565.9	1,109.9	
20	Paralysis	33.6	4.8	2.1	2.7	2.4	1.3	1.2	4.0	14.3	41.6	161.2	544.6	1,463.5	
21	Convulsions of infants	22.0	714.8	177.0	0.8	93.7	-----	-----	-----	-----	-----	-----	-----	-----	
22	Other nervous diseases	35.9	125.6	40.3	11.1	26.5	10.5	16.1	16.1	45.7	59.3	100.8	263.6	435.7	
23	Organic heart disease	85.8	156.2	36.5	5.0	21.6	12.2	15.4	26.8	60.4	155.7	403.3	1139.6	1,726.5	
24	Other circulatory diseases	22.3	40.2	10.7	4.6	7.8	3.8	7.1	10.4	17.1	36.8	111.6	234.5	312.4	
25	Bronchitis	27.4	368.6	110.2	2.3	59.2	1.1	1.5	2.9	8.0	18.3	57.6	211.3	575.5	
26	Broncho-pneumonia	10.3	190.0	57.5	4.6	32.5	0.6	1.0	0.6	0.8	4.4	9.9	50.4	57.6	
27	Pneumonia	76.8	586.0	204.2	21.5	117.8	16.0	29.3	33.2	47.3	80.9	182.8	494.2	978.4	
28	Pleurisy	4.5	1.6	2.1	0.8	1.5	1.3	2.9	3.2	6.4	7.2	22.5	19.4	49.3	
29	Other respiratory diseases	18.7	125.6	35.8	3.5	20.5	1.9	6.8	5.5	11.9	23.8	65.7	160.9	320.6	
30	Stomach diseases	20.6	152.9	38.6	4.2	22.3	0.8	3.2	8.6	15.5	34.4	80.1	160.9	337.1	
31	Infantile diarrhea	75.8	2203.8	612.6	1.2	323.6	-----	-----	-----	-----	-----	-----	-----	-----	
32	Diarrhea and enteritis	13.4	8.0	3.4	3.8	3.6	3.8	3.9	4.3	6.8	16.1	54.9	129.9	583.7	
33	Dysentery	6.4	37.0	17.9	1.2	10.0	0.4	0.7	0.6	2.0	6.7	12.6	64.0	189.1	
34	Liver diseases	20.3	25.8	9.0	0.8	5.1	1.7	3.9	8.1	25.8	54.3	102.6	182.2	213.8	
35	Peritonitis	12.1	32.2	13.4	5.0	9.4	9.3	16.1	13.0	7.2	7.2	19.8	38.8	32.9	
36	Iliac abscess	7.0	-----	1.7	6.5	4.0	10.9	8.0	6.9	7.2	3.9	6.3	1.9	8.2	
37	Other digestive diseases	19.1	138.4	40.3	9.2	25.6	4.4	6.6	7.8	13.9	28.3	46.8	100.8	353.5	
38	Bright's disease	38.9	11.3	5.9	3.1	4.5	4.4	11.5	20.8	35.8	74.3	205.3	440.0	567.3	
39	Other genito-urin'ry diseases	22.9	20.9	7.2	1.5	4.5	4.0	13.2	16.4	18.3	30.5	76.5	219.0	666.0	
40	Puerperal diseases	16.5	-----	-----	-----	-----	8.0	41.0	41.5	14.7	-----	-----	-----	-----	
41	Skin diseases	9.7	59.6	17.2	0.4	9.3	1.7	2.4	1.2	5.6	10.5	34.2	95.0	279.5	
42	Diseases locomotor system	3.8	17.7	4.5	2.7	3.6	2.1	3.2	1.7	3.2	8.3	7.2	19.4	-----	
43	Malformations	6.0	207.7	48.8	-----	24.7	0.4	0.2	-----	-----	-----	-----	-----	-----	
44	Diseases of infancy	49.8	1841.6	402.5	-----	212.4	-----	-----	-----	-----	-----	-----	-----	-----	
45	Diseases of old age	28.0	-----	-----	-----	-----	-----	-----	-----	-----	0.6	22.5	331.4	3,782.0	
46	Suicides	8.0	-----	-----	-----	-----	1.7	4.9	7.5	20.7	21.6	22.5	23.3	32.9	
47	Accidents	61.9	82.1	63.4	34.2	49.6	44.6	54.6	54.5	61.6	56.0	90.9	176.4	888.6	
48	Homicides	1.4	6.4	1.7	-----	0.9	1.1	1.7	2.3	1.2	1.7	-----	1.9	-----	
49	Causes ill-defined	57.3	486.2	110.9	3.8	60.3	4.4	7.3	13.8	20.7	56.5	121.5	576.6	2,680.3	

DIAGRAM VI.—INCIDENCE OF CERTAIN IMPORTANT CAUSES OF DEATH, BY
DECENNIAL AGE PERIODS, IN MICHIGAN, 1898.

AGE PERIODS: 0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 80+



NOTE.—The death rates by decennial age periods represented in this diagram are given in Table 21 on the opposite page.

DEATH RATES BY DECENNIAL AGE PERIODS.

In Table 21, p. lxxxvi, which is illustrated in part by the curves represented in Diagram VI, some of the most important characteristics of the mortality of Michigan for the year 1898 are displayed. The rates are based, not on the total population of the State at all ages, but on the estimated population for 1898 at each decennial period, so that the deaths are compared directly with the element of population affording them. Study of the data thus analyzed is more satisfactory for many purposes than the mere comparison of the crude death rates at all ages uncorrected for age distribution.

The base 100,000 population has been chosen for these rates, as for all other rates of causes of death in this report, because of its special convenience. By moving the decimal point one place to the left, rates per 10,000 population, correct to two decimal places are obtained, while by dispensing with the decimal point entirely we have rates per million as used in the English registration reports. The death rates of the totals are allowed to stand as rates per 100,000, being the summation of the rates for individual causes of death under each head, but for convenience, in ordinary comparisons, the decimal point should be shifted two places to the left, thus giving us the customary rates per 1,000. This is the practice of some excellent statisticians in regard to the statement of deaths from individual diseases, but on account of the number of places of decimals required, would not seem as convenient as the method here employed.

In Diagram VI a special method has been employed for showing the total mortality by decennial age periods in comparison with the rates for the various individual diseases. If all were placed on the same scale, it would be quite impracticable to include the mortality from all causes and from single diseases within the limits of a diagram of ordinary dimensions, hence the curve showing total deaths was reduced to a scale of one-tenth of that for the individual diseases represented. The scale numbers as referring to total deaths should omit the last cipher, being read as rates per 10,000 population instead of per 100,000. It is obvious that the general direction and tendency of the curve for total mortality can then be compared with the special disease under consideration, and their relative weights at different periods of life be appreciated.

Instead of using a different scale for the death rates from all causes, we may conveniently regard the line "All Causes—1-10" in Diagram VI as showing the rate of one-tenth the total mortality on the same scale, viz., per 100,000 estimated population, as that for pulmonary tuberculosis, etc., and thus compare the rates for individual diseases with the decinormal mortality, as it may be termed.

Among the causes of death shown in the diagram we may note several types of distribution through the decennial periods of age. Scarlet fever and diphtheria are eminently children's diseases, affecting chiefly the first decade and rapidly declining in consequence as a cause of death with adult life. On the other hand we have cancer, organic heart diseases, apoplexy and Bright's disease with low rates for the early years of life and a rapid rise after the period of middle age is passed. Pneumonia and diarrhea (including enteritis) are most fatal at the extremes of life,

robbing the cradle and serving as a favorite portal to those who, from advancing years, must soon from one cause or another be admitted to the grave. Typhoid fever and pulmonary tuberculosis seem to stand in still another class, bearing upon all ages, so far as the experience of this year indicates, with approximately equal force. If other forms of tuberculosis than pulmonary were included, the rate for the first decennium would be somewhat increased, but not sufficiently to raise it to an equality with the other periods. In fact the early incidence of tuberculosis, chiefly intestinal, is greatest in infants under one year of age and quite rapidly declines among children so that the rates from 5 to 20 years are low. Typhoid fever kills more persons in proportion to population during the age period from 20 to 30 than at any other. Accidents and violence also run uniformly as regards the mortality by ages, at least for early and middle life; with advanced years a rapid increase is shown, corresponding to the serious results observed in elderly persons from trifling injuries and also to some increased liability to accident. This increase is principally for extreme old age above 80 years.

DISCUSSION OF INDIVIDUAL CAUSES OF DEATH.

In the following text, with accompanying special tables and diagrams, the occurrence of the various causes of death in Michigan during the year 1898 is discussed on the basis, chiefly, of the data presented in Tables 20 and 21. It should be remembered that the statements made appertain to a single year of registration and a year of perhaps exceptionally low mortality. Owing to the improvement in the registration of deaths under the new law, comparisons cannot well be made with the results of previous years of registration in Michigan, and if reference is made to former reports, the differences between the old systems of classification made use of and the Bertillon classification, employed for the first time in the present report, should be held in mind.

The general features of the mortality from all causes have already been referred to and graphically represented in Diagrams I, V and VI. In the latter, which shows the death rates by decennial periods of age, the decrease from the first to the second decennium may be noted, with the uniformly accelerated rate of increase from the second decennium to the end of life. The break in the regularity of this curve caused by a disproportional rise in the mortality of persons aged 20 to 30 years may be caused by the special incidence of causes of death due to childbearing at this age.

Stillbirths are presented in connection with total deaths in Table 20 and also in the primary tables (Table III, p. 20, etc.). They are not included in the rates by age periods given in Table 21 and illustrated in Diagram VI, nor will further reference be made to them in this portion of the report. While properly deaths from unknown causes and logically requiring consideration as a part of the mortality of the State, the prevailing practice among statisticians is to consider them in a separate class. Stillbirths are returned both as births and deaths in this State, the former under the old law of 1867 and the latter under the recent act of 1897. The general worthlessness of the returns of births under the old law may be illustrated by the fact that while the two sets of returns should agree in the number of stillbirths reported, there were only 552

included in births (Table III, p. 150) while the deaths included 1,300. Even then it is probable that more of this class are omitted from deaths than any other owing to the obvious difficulties in the way of exact registration.

TYPHOID FEVER.

Classification.—The Bertillon classification of causes of death gives the following:

1. Typhoid Fever. *This title includes:* Dothinerteritis; mucous, continued, ataxic, or adynamic fever; abdominal typhus.

This title does not include: Adynamia (154); ataxo-adynamia (154); typhoid-pneumonia (72).

Frequent complications: Pneumonia; pulmonary congestion; intestinal perforation; peritonitis; intestinal hemorrhage; sloughing; albuminuria.

The reference numbers refer to the list as printed in the Appendix of this report or as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40 and Table VII (cities), p. 78.

No reference is made in the classification to the return "typho-malarial fever," from which 73 deaths were reported in Michigan during the year 1898. Very likely most of these were typhoid fever and they are so included in this text. The primary tables, however, assign a separate line to this cause (see pp. 20, 40 and 68). Another form of return deserves attention, namely "typhoid pneumônia." Of course, pneumonic typhoid, that is pneumonia occurring in and as part of the course of typhoid fever, should be included under the latter term, but "typhoid pneumonia," as appears from inquiries made directly of physicians reporting this term, is generally simple pneumonia with typhoid or cerebral symptoms.

Deaths from typhoid fever may be returned under such indefinite headings as "fever," "bilious fever," "inflammation," appendicitis, peritonitis, diarrhea and various forms of bowel disease, brain fever or meningitis when the cerebral symptoms are marked, "heart failure," or various forms of heart disease, when the typhoid poison kills by depressing the circulatory system or when there is actually some organic disease of the heart present. Again, anemia, debility or "marasmus" may include deaths primarily from typhoid fever. Not only the great bulk of the deaths returned from typho-malarial fever are probably to be truly classified under typhoid fever, but also some deaths reported as due to malarial fever or intermittent fever would probably prove to be typhoid fever on investigation. The United States Army Commission to investigate the occurrence of this disease in the military camps during the late Spanish-American war found that a little less than one-half of the cases of typhoid fever actually occurring was correctly diagnosed as such by the army surgeons. Michigan has notoriously been the "dumping ground" of diploma mill practitioners of medicine for years past, and it is not likely that a higher standard of accuracy in this respect prevails than in the medical service of the volunteer army.

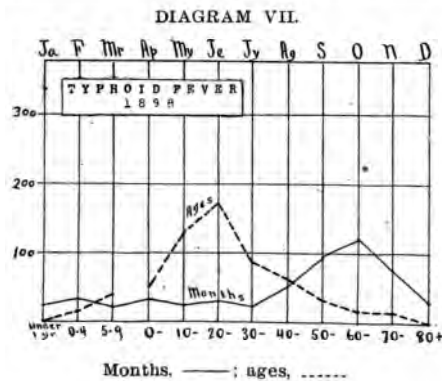
Occurrence in Michigan, 1898.—There were 572 deaths from typhoid fever in Michigan during the year 1898, corresponding to a death rate of 24.3 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 22, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the central counties, namely 26.6 per 100,000, and the lowest in the northern counties, or 19.4 per 100,000. For the State as a whole the month of October had the most deaths and the months of March and July the fewest. The largest number of deaths occurred between the ages of 20 and 29 years. By sex there were 348 deaths of males and 224 deaths of females.

Diagram VII in connection with the table illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

Table 22.—Deaths from typhoid fever in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	572	24.3	25	35	24	32	27	30	24	55	96	117	76	31
I. Upper peninsula	42	19.9		2	4	2	1	4		4	11	10	2	2
II. Northern counties	52	19.4	3	3	1	1	3	5	1	2	8	15	9	1
III. Central counties	120	26.6	3	7	4	6	9	3	1	7	18	26	21	15
IV. Southern counties	358	25.2	19	23	15	23	14	18	22	42	59	66	44	13



Deaths by ages, 1898.			
Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year....	2	50 to 59 years....	32
Under 5 years....	14	60 to 69 years....	18
5 to 9 years.....	39	70 to 79 years....	15
Under 10 years...	53	80 years and over	1
10 to 19 years....	130	Deaths by sex, 1898.	
20 to 29 years....	172		
30 to 39 years....	88		
40 to 49 years....	63		
		Males.....	348
		Females.....	224

MEASLES.

Classification.—The Bertillon classification of causes of death gives the following:

5. Measles. *This title includes:* Measly or rubeolar eruption.

This title does not include: Rubella (13).

Most frequent complications: Bronchitis; broncho-pneumonia, etc.

The reference number refers to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40 and Table VII (cities) p. 78.

Occurrence in Michigan, 1898.—There were 131 deaths from measles in Michigan during the year 1898, corresponding to a death rate of 5.6 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 23, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 14.2 per 100,000, and the lowest in the southern counties, or 2.5 per 100,000. For the State as a whole the month of March had the most deaths and the month of September the fewest, none being reported from this cause. The largest number of deaths occurred under the age of 5 years. By sex there were 57 deaths of males and 74 deaths of females.

Table 23. — *Deaths from measles in Michigan, 1898.*

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	131	5.6	8	9	24	21	21	14	17	8	-----	5	2	2
I. Upper peninsula	30	14.2	1	-----	2	3	3	5	6	2	-----	4	2	2
II. Northern counties	22	8.2	4	-----	2	4	7	1	3	1	-----	-----	-----	-----
III. Central counties	44	9.8	2	4	13	5	3	6	6	4	-----	1	-----	-----
IV. Southern counties	35	2.5	1	5	7	9	8	2	2	1	-----	-----	-----	-----
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
57	74		35	85	13	98	17	9	3	3	-----	1	-----	-----

SCARLET FEVER.

Classification.—The Bertillon classification of causes of death gives the following:

6. Scarlet fever. *This title includes:* Puerperal scarlatina; scarlatinal angina. *Frequent complications:* Albuminuria; eclampsia; edema of the glottis; hemorrhage; endocarditis; pericarditis; paralysis; diphtheria; convulsions.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Besides the terms given above, deaths from scarlet rash should also be included under scarlet fever. It may also be noted that the term scarlatina, which is an exact synonym of scarlet fever, is by some considered a mild form of scarlet fever. It should be plainly understood that there is no distinction whatever in these terms.

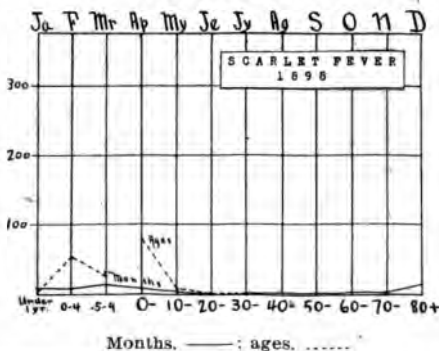
Occurrence in Michigan, 1898.—There were 91 deaths from scarlet fever in Michigan during the year 1898, corresponding to a death rate of 3.9 per 100,000 population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 24, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the northern counties, namely 7.8 per 100,000, and the lowest in the central counties, or 1.8 per 100,000. For the State as a whole the month of December had the most deaths and the month of July the fewest. The largest number of deaths occurred under the age of 5 years. By sex there were 42 deaths of males and 49 deaths of females.

Table 24.—Deaths from scarlet fever in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	91	3.9	11	11	14	8	5	4	2	5	4	6	5	16
I. Upper peninsula	4	1.9		1		1		1						1
II. Northern counties	21	7.8	4	5	5	3		2		1		1		
III. Central counties	8	1.8			2		1				1	1	1	2
IV. Southern counties	58	4.1	7	5	7	4	4	1	2	4	3	4	4	13

DIAGRAM VIII.



Deaths by ages, 1898.

Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year....	7	50 to 59 years....	.....
Under 5 years....	53	60 to 69 years....	.....
5 to 9 years....	25	70 to 79 years....	.....
Under 10 years..	78	80 years and over .....	.....
10 to 19 years....	10	Deaths by sex, 1898.	
20 to 29 years....	1	Males.....	42
30 to 39 years....	2	Females.....	49
40 to 49 years....	.....	

Diagram VIII in connection with the table illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

WHOOPIING COUGH.

Classification.—The Bertillon classification of causes of death gives the following:

7. Whooping cough.

Frequent complications: Bronchitis; convulsions.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Broncho-pneumonia and pneumonia, which are very frequently returned as complications of whooping cough, are not referred to in Dr. Bertillon's note above. In very many cases these complications are given as the primary cause or disease causing death, and whooping cough or pertussis is merely indicated as a contributory cause to the fatal broncho-pneumonia or pneumonia. In these cases the deaths have been compiled under whooping cough in the Michigan report, as the affection of the lungs is regarded as merely an incident of the primary disease.

Occurrence in Michigan, 1898.—There were 282 deaths from whooping cough in Michigan during the year 1898, corresponding to a death rate of 12.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 25, which also contains a statement of the age and sex distribution.

The importance of whooping cough as a cause of death is hardly appreciated by the majority of persons, yet the statistics show that more deaths occurred from this cause than from measles and scarlet fever taken together. There is much less stringency in enforcing the isolation of children sick from whooping cough and the fatality of the disease, or the ratio of deaths to cases, is probably much less than in measles or scarlet fever. Nevertheless, the large aggregate death rate should point to the necessity of taking stricter precautions to prevent the spreading of this disease.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 18.0 per 100,000, and the lowest in the northern counties, or 8.6 per 100,000. For the State as a whole the month of July had the most deaths and the months of January, February and November the fewest. The great majority of deaths occurred under the age of 5 years. By sex there were 130 deaths of males and 152 deaths of females.

Table 25.—Deaths from whooping cough in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	282 ^a	12.0	13	13	19	28	24	26	40	35	35	15	13	19
I. Upper peninsula	38	18.0	-----	2	4	4	5	4	4	4	3	2	2	4
II. Northern counties	23	8.6	2	1	1	1	3	2	2	4	1	-----	1	5
III. Central counties	69	15.3	3	-----	2	10	5	9	12	5	10	6	4	3
IV. Southern counties	152	10.7	8	10	12	13	11	11	22	23	22	7	6	7
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
130	152		170	271	10	281	-----	1	-----	-----	-----	-----	-----	-----

DIPHTHERIA AND CROUP.

Classification.—The Bertillon classification of causes of death gives the following:

8. Diphtheria and croup. *This title includes:* Diphtheritic, pseudo-membranous, infectious, malignant, or toxic anginas; diphtheria in all forms and especially diphtheria of wounds, of the skin, of the conjunctiva, mouth, etc.; pseudo-membranous bronchitis; pseudo-membranous laryngitis; malignant laryngitis; diphtheritic paralysis.

This title does not include: Stridulous croup (68); spasmodic croup (68); false croup (68).

Frequent complications: Pneumonia; albuminuria; paralysis.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Following the custom prevalent among sanitarians, Dr. Bertillon has united deaths returned from diphtheria and from croup under one title, and in the condensed tables to which the text of this report makes special reference the same practice has been followed. Croup is usually considered to be laryngeal diphtheria, caused by the same specific germ as diphtheria proper, and is hence properly included with diphtheria in statistics prepared for sanitary purposes. Historically, however, the association of these terms is of comparatively recent date and as some changes of opinion may possibly lead to their separation in the future, or at least to the desirability of their separate study, this title has been separated in the primary tables (Tables III, IV and VII) under 8a, Diphtheria, 8b, Membranous croup and 8c, Croup, the latter returned without any qualification to show whether it is diphtheritic in character or simply spasmodic or non-specific croup. The latter is compiled among dis-

eases of the respiratory organs. It may be said that deaths from tonsillitis, quinsy, laryngitis, etc., especially during the occurrence of diphtheria, should be regarded with suspicion, as they not infrequently hide deaths from diphtheria.

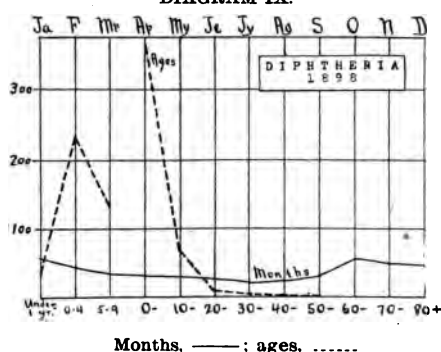
Occurrence in Michigan, 1898.—There were 456 deaths from diphtheria and croup in Michigan during the year 1898, corresponding to a death rate of 19.4 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 26, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 29.8 per 100,000, and the lowest in the central counties, or 16.4 per 100,000. For the State as a whole the month of January had the most deaths and the month of July the fewest. The largest number of deaths occurred under the age of 5 years. By sex there were 211 deaths of males and 245 deaths of females.

Table 26.—Deaths from diphtheria and croup in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	456	19.4	58	43	35	31	30	27	22	25	32	57	49	47
I. Upper peninsula	63	29.8	7	3	8	11	6	3	5	3	3	7	5	2
II. Northern counties	61	22.7	8	5	4	.....	5	12	5	4	.....	3	9	6
III. Central counties	74	16.4	15	11	6	3	2	2	2	5	5	9	7	7
IV. Southern counties	258	18.2	28	24	17	17	17	10	10	13	21	38	28	32

DIAGRAM IX.



Deaths by ages, 1898.

Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year....	35	50 to 59 years....	3
Under 5 years....	233	60 to 69 years....	.....
5 to 9 years.....	134	70 to 79 years....	.....
Under 10 years..	367	80 years and over .....	.....
10 to 19 years....	69	Deaths by sex, 1898.	
20 to 29 years....	10	Males.....	211
30 to 39 years....	5	Females.....	245
40 to 49 years....	2		

Diagram IX in connection with the table illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more

advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

INFLUENZA.

Classification.—The Bertillon classification of causes of death gives the following:

9. Influenza. *This title includes:* Grip; pneumonia due to influenza; bronchitis or broncho-pneumonia due to influenza.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Influenza, or as it is most commonly returned "la grippe," is probably more loosely used than any other expression for the cause of death. For some years past grip has been more or less frequently returned by the physicians of Michigan and very frequently in connection with bronchitis, broncho-pneumonia and pneumonia, which may be considered either as sequels or perhaps special forms of the disease. It is in fact more than likely that many of these deaths are due to bronchitis or pneumonia and that the association of influenza with their causation is purely fanciful or conjectural. As, however, influenza cannot be considered a result of bronchitis or pneumonia but the converse obtains, that is, bronchitis and pneumonia may be considered as results or complications of influenza, it would seem proper in the adoption of a uniform rule for compilation that all these deaths should be compiled under what may be reasonably considered the primary cause, viz., influenza. This will involve an apparent reduction in the number of deaths reported from bronchitis, broncho-pneumonia, pneumonia, and some other diseases of the respiratory system, and in order to obtain a true representation of the facts, a special compilation of deaths from influenza should be made, showing the manner in which this return is associated with other causes. It may be further said that deaths from influenza are frequently associated with deaths from organic heart disease, Bright's disease, apoplexy, paralysis, consumption, etc., in which the causative influence of influenza cannot be directly traced, although it may very likely have had considerable effect in accelerating the death. In this case the deaths have been compiled under what the physicians reported as the disease causing death.

Occurrence in Michigan, 1898.—There were 455 deaths from influenza in Michigan during the year 1898, corresponding to a death rate of 19.4 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 27, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 23.8 per 100,000, and the lowest in the Upper Peninsula, or 6.1 per 100,000. For the State as a whole

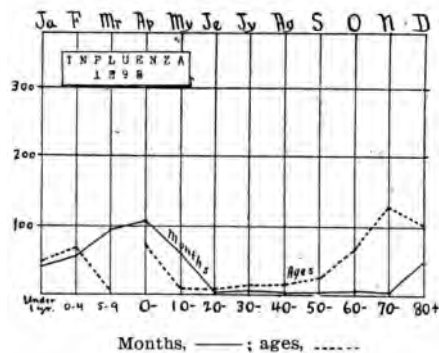
the month of April had the most deaths and the month of August the fewest. The largest number of deaths occurred between the ages of 70 and 79 years. By sex there were 214 deaths of males and 241 deaths of females.

Diagram X in connection with the table illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

Table 27.—Deaths from influenza in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	455	19.4	39	59	93	110	64	7	8	5	6	9	6	49
I. Upper peninsula	13	6.1	2	1	2	3	2	-----	1	1	-----	-----	-----	1
II. Northern counties	41	15.3	5	6	13	5	2	3	1	1	-----	-----	-----	5
III. Central counties	63	14.0	6	10	7	12	13	-----	1	1	2	2	2	7
IV. Southern counties	338	23.8	26	42	71	90	47	4	5	2	4	7	4	36

DIAGRAM X.



Deaths by ages, 1898.

Ages.	Number.	Ages.	Number.
Under 1 year....	48	50 to 59 years....	26
Under 5 years....	67	60 to 69 years....	68
5 to 9 years.....	7	70 to 79 years....	129
Under 10 years..	74	80 years and over	104
10 to 19 years....	10	Deaths by sex, 1898.	
20 to 29 years....	10		
30 to 39 years....	16	Males.....	214
40 to 49 years....	17	Females.....	241

OTHER EPIDEMIC DISEASES.

Under this title are grouped a few deaths from causes ordinarily of not much importance in this State. Among the 28 deaths included here in 1898 were 16 from "scurvy," a term of very doubtful significance as met with in these returns, 1 from smallpox, 2 from "cholera nostras,"

which ought probably to have been compiled under diarrhea, 4 from trichinosis, 1 from German measles, 1 from chickenpox and 3 from mumps. Under this title would be included deaths from Asiatic cholera, plague, yellow fever, etc., if these diseases ever occurred in Michigan.

MALARIA.

Classification.—The Bertillon classification of causes of death gives the following:

19. Intermittent fever. *This title includes:* Paludal fever; pernicious fever; pernicious attack; remittent fever; malaria.

This title does not include: Malarial cachexia (20).

20. Malarial cachexia. *This title includes:* Marsh or pernicious cachexia; marsh anemia; paludism.

This title does not include: Pernicious anemia (32).

Frequent complications: Dropsy; enlargement of the spleen; cardiac or renal lesions.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

In addition to the number of deaths returned from malarial diseases it is barely possible that some of the 73 deaths returned from "typho-malarial fever" should also be included here, although it is much more probable that they belong to typhoid fever, as stated under that head. The adjective "malarial" is frequently used in a rather indefinite manner for any febrile condition and it is doubtful if the returns under this head are fully accurate.

Table 28.—Deaths from malaria in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	175	7.4	9	8	9	10	8	17	14	17	37	30	11	5
I. Upper peninsula.....	9	4.3	1	1							7			
II. Northern counties.....	13	4.8	1	1		1	1	2	1	2	2	1	1	
III. Central counties.....	32	7.1		2	3	1		5	4	4	5	3	3	2
IV. Southern counties.....	121	8.5	7	4	6	8	7	10	9	11	23	26	7	3
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
97	78		11	23	10	33	19	27	12	15	17	18	22	12

Occurrence in Michigan, 1898.—There were 175 deaths from malaria in

Michigan during the year 1898, corresponding to a death rate of 7.4 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 28, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 8.5 per 100,000, and the lowest in the Upper Peninsula, or 4.3 per 100,000. For the State as a whole the month of September had the most deaths and the month of December the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 97 deaths of males and 78 deaths of females.

TUBERCULOSIS.

Classification.—The Bertillon classification of causes of death gives the following:

22 A. Tuberculosis of the lungs. *This title includes:* Pulmonary tuberculosis; pulmonary phthisis; phthisis (without epithet); phymatosis; tubercle of the lungs; acute, galloping or miliary tuberculosis or phthisis; granulations (of the lungs); pulmonary cavities; consumption; caseous pneumonia; tubercular, bacillary, specific, granular, neoplastic or heteroplastic bronchitis or pneumonia; tubercular pleurisy; pulmonary anthracosis; tubercular hemoptysis.

This title does not include: Tuberculosis (without epithet) (22 F; hemoptysis (without epithet) (77 B.); pulmonary hemorrhage (77 B); bronchorrhagia (without epithet) (77 B); apical pneumonia (72); laryngeal phthisis (22 E).

Frequent complications: Hemorrhage; pneumonia; pleurisy; persistent diarrhea.

22 B. Tuberculosis of the meninges. *This title includes:* Meningeal tuberculosis; tubercular meningitis; granular, miliary, caseous, bacillary, specific, neoplastic or heteroplastic meningitis.

This title does not include: Meningitis (without epithet), even for children of early age.

22 C. Tuberculosis of the peritoneum. *This title includes:* Tubercular, granular, bacillary or specific peritonitis; peritoneal tuberculosis; abdominal tuberculosis; tabes mesenterica.

This title does not include: Tubercular enteritis (22 E).

22 D. Tuberculosis of the skin. *This title includes:* Lupus; *esthiomène*.

22 E. Tuberculosis of other organs. *This title includes:* Laryngeal phthisis; tubercular laryngitis; tubercular nephritis; tubercular enteritis; bacillary abscess; tubercular ulcer; tuberculosis of the bones.

This title does not include: Pott's disease (130).

22 F. General tuberculosis. *This title includes:* Tuberculosis (without epithet).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

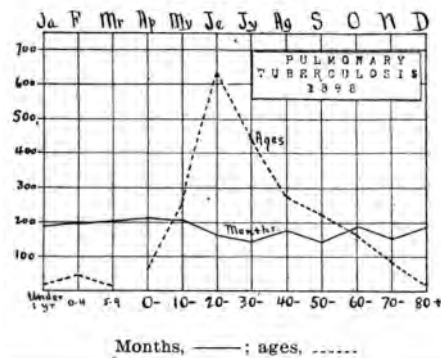
For the practical purposes of this discussion the subject of tuberculosis may be divided into 22 A, Pulmonary tuberculosis, and other forms of tuberculosis, including the titles 22 B to 22 F, as given above. In addition to the deaths so compiled it may be remembered that the Bertillon classification is not strictly up to date in its classification of tuberculosis, and that deaths from tuberculosis of the vertebræ (Pott's disease, 130), white swellings, scrofula (tuberculosis of lymphatic glands, 23) are not included under tuberculosis, as they should be. It is to be hoped that a change will be made in this respect by the revision of 1900. It is also a

fact that a very large percentage of the deaths from pleurisy is in reality due to tuberculosis, and very probable that some of those returned from bronchitis, broncho-pneumonia and pneumonia are in reality tuberculosis of the lungs. When we come to the obscure forms of tuberculosis, as that of the meninges, of the peritoneum, of the kidneys and other organs, the possibility of mistakes is greatly increased and it is very likely that some of the obscure diseases of the nervous system, especially in children, of the digestive system, including deaths from "marasmus," debility, atrophy, inanition, anemia and other more or less indefinite terms, may in fact be due to intestinal or peritoneal tuberculosis.

Table 29.—Deaths from pulmonary tuberculosis in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	2,153	91.6	186	195	202	213	208	167	147	174	145	182	152	182
I. Upper peninsula.....	183	86.6	10	16	15	13	23	15	14	9	10	19	15	24
II. Northern counties.....	208	77.5	16	15	19	23	21	18	16	19	6	17	21	17
III. Central counties.....	369	81.8	37	31	41	35	31	28	24	26	36	29	19	32
IV. Southern counties.....	1,393	98.2	123	133	127	142	133	106	93	120	93	117	97	109

DIAGRAM XL.



Deaths by ages, 1898.

Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year....	18	50 to 59 years....	220
Under 5 years....	48	60 to 69 years....	162
5 to 9 years.....	15	70 to 79 years....	83
Under 10 years..	63	80 years and over	20
10 to 19 years....	250	Deaths by sex, 1898.	
20 to 29 years....	641	Males.....	963
30 to 39 years....	440	Females.....	1,190
40 to 49 years....	272		

A very unfortunate feature of the Bertillon classification, as applied to Michigan statistics, and possibly as applied to the statistics of some other States, is the fact that the final division, 22 F, General tuberculosis, includes tuberculosis without qualification. The supposition evidently was that when a physician reported tuberculosis without qualification that he intended to state that all or many of the organs of the body were affected and that the disease was not located in any one particular organ. Now as a matter of fact we find upon inquiry of the physicians who return "tuberculosis" that in a great majority of cases they intend to signify pulmonary tuberculosis and consequently the number of deaths from pulmonary tuberculosis is apparently somewhat less than it should

be. This difficulty may be practically obviated by adding 22 A and 22 F and the resulting total will much more nearly represent the total number of deaths reported from consumption of the lungs.

Occurrence in Michigan, 1898.—There were 2,153 deaths returned from pulmonary tuberculosis in Michigan during the year 1898, corresponding to a death rate of 91.6 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 29, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 98.2 per 100,000, and the lowest in the northern counties, or 77.5 per 100,000. For the State as a whole the month of April had the most deaths and the month of September the fewest. The largest number of deaths occurred between the ages of 20 and 29 years. By sex there were 963 deaths of males and 1,190 deaths of females.

Diagram XI in connection with the table illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

Table 30.—Deaths from other forms of tuberculosis (than pulmonary) in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	673	28.6	54	62	69	63	62	65	53	54	50	50	47	44
I. Upper peninsula	70	33.1	6	5	8	6	4	7	3	7	6	5	9	4
II. Northern counties...	55	20.5	4	5	2	6	2	6	5	5	6	7	5	2
III. Central counties...	113	25.0	11	9	14	11	11	11	5	7	13	9	4	8
IV. Southern counties...	435	30.7	33	43	45	40	45	41	40	35	25	29	29	30
Deaths by sex, 1898.			Deaths by ages, 1898.*											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
318	355		68	132	29	161	67	152	93	60	68	46	19	6

* One with age not stated.

OTHER FORMS OF TUBERCULOSIS.

Occurrence in Michigan, 1898.—There were 673 deaths from other forms of tuberculosis in Michigan during the year 1898, corresponding to a death rate of 28.6 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 30, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula namely 33.1 per 100,000, and the lowest in the northern counties, or 20.5 per 100,000. For the State as a whole the month of March had the most deaths and the month of December the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 318 deaths of males and 355 deaths of females.

CANCER.

Classification.—The Bertillon classification of causes of death gives the following:

25 A. Cancer of the mouth. *This title includes:* Cancer of the lips, tongue roof of the mouth, or of the *velum palati*; cancer of the jaw; epithelioma, carcinoma, or cancrroid of those parts; smokers' cancer.

25 B. Cancer of the stomach; of the liver. *This title includes:* Cancer of the esophagus; cancer of the cardiac portion of the stomach; cancer of the pylorus; carcinoma; scirrhus, colloid or encephaloid tumor of those parts; gastro-carcinoma; tumor of the stomach.

This title does not include: Organic lesion of the stomach (81); hematemeses (81).

25 C. Cancer of the intestines; of the rectum. *This title includes:* Cancer of the colon; cancer of the anus; carcinoma, scirrhus, encephaloid, cancrroid or epithelioma of those parts.

25 D. Cancer of the female genital organs. *This title includes:* Cancer of the womb; cancer of the ovary; cancer of the vagina; cancer of the vulva; carcinoma, scirrhus, encephaloid, colloid, heteromorphous or neoplastic tumor, sarcoma or epithelioma of those organs.

25 E. Cancer of the breast. *This title includes:* Carcinoma, scirrhus, encephaloid, colloid, heteromorphous or neoplastic tumor, cancrroid or epithelioma of the breast or mammary gland.

25 F. Cancer of the skin. *This title includes:* Cancrroid (without epithet); epithelioma or epithelial tumor (without epithet); cancer of the face or cervicofacial cancer; *noli-me-tangere*.

This title does not include: Lupus (22 D); *esthiomène* (22 D).

25 G. Cancer of other organs. *This title includes:* Cancer of the peritoneum; cancerous peritonitis; pelvic cancer; cancer of the kidney, bladder or prostate; cancerous goitre; thyreo-sarcoma; sarco-hydrocele; cancer of bone; osteosarcoma; cancerous tumor or sarcoma of the neck; carcinoma, scirrhus, encephaloid, cancerous ulcer, malignant tumor, sarcoma, or malignant fungus of these parts or of unspecified part of the body.

This title does not include: Cancer of the esophagus (25B); cancer of the anus (25 C); cancer of the ovary, vagina or vulva (25 D).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Besides the number of deaths returned from cancer there are undoubtedly a certain number of cases recorded from various forms of tumors of malignant character and which should properly be compiled under this head. It would be desirable that all indefinite tumors should be com-

piled and studied in connection with cancers. It may be noted that in the causes of death as distributed among the various organs and parts of the body additions should be made for the various forms of cancer in order to find the true anatomical distribution of disease.

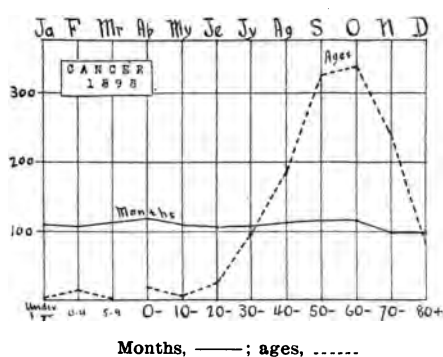
Occurrence in Michigan, 1898.—There were 1,321 deaths from cancer in Michigan during the year 1898, corresponding to a death rate of 56.2 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 31, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 64.3 per 100,000, and the lowest in the northern counties, or 29.8 per 100,000. For the State as a whole the month of April had the most deaths and the month of November the fewest. The largest number of deaths occurred between the ages of 60 and 69 years. By sex there were 549 deaths of males and 772 deaths of females.

Table 31.—Deaths from cancer in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	1,321	56.2	111	107	115	120	110	106	109	113	116	117	98	99
I. Upper peninsula	99	46.8	8	12	11	8	8	11	7	2	8	11	7	6
II. Northern counties	80	29.8	9	8	10	4	7	7	4	10	5	6	5	5
III. Central counties	230	51.0	19	17	17	17	17	30	19	20	18	21	14	21
IV. Southern counties	912	64.3	75	70	77	91	78	58	79	81	85	79	72	67

DIAGRAM XII.



Deaths by ages, 1898.

Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year....	4	50 to 59 years....	325
Under 5 years....	15	60 to 69 years....	339
5 to 9 years.....	6	70 to 79 years....	239
Under 10 years..	21	80 years and over	79
10 to 19 years....	9	Deaths by sex, 1898.	
20 to 29 years....	28		
30 to 39 years....	94	Males.....	549
40 to 49 years....	185	Females.....	772

Diagram XII, in connection with the table, illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more

advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

RHEUMATISM.

Classification.—The Bertillon classification of causes of death gives the following:

26. Rheumatism. *This title includes:* Arthritis, rheumatismal arthritis; rheumatismal meningitis; abdominal or cerebral rheumatism; rheumatismal vertigo; rheumatismal endocarditis, pericarditis, pleurisy or peritonitis.

This title does not include: Organic diseases of rheumatismal origin (57, etc.); nodose rheumatism, (136); gonorrheal rheumatism (103 A or 114 A).

27. Gout.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Rheumatism is much more important as a cause of sickness in Michigan than as a cause of death. Nevertheless, quite a large number of deaths are thus annually returned besides a large number from heart disease originating in rheumatism. Under the classification, an acute cardiac affection in the immediate course of an attack of rheumatic fever is here classified, while the remoter consequences of the disease are placed under the various organs which they affect. The title "gout" has been united with rheumatism for use in Michigan, as practically no deaths are returned under that head.

Table 32.—Deaths from rheumatism in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	205	8.7	16	19	16	22	16	19	16	9	20	14	21	17
I. Upper peninsula	4	1.9						1	1			2		
II. Northern counties...	19	7.1	1	1	3	3			1	1	3	3	2	1
III. Central counties...	50	11.1	6	3	1	7	6	9	3	2	4	2	4	3
IV. Southern counties...	132	9.3	9	15	12	12	10	9	11	6	13	7	15	13
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.	
109	96	2	5	8	13	19	14	23	14	24	39	47	12	

Occurrence in Michigan, 1898.—There were 205 deaths from rheumatism reported as a direct cause in Michigan during the year 1898, corresponding to a death rate of 8.7 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 32, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the central counties, namely 11.1 per 100,000, and the lowest in the Upper Peninsula, or 1.9 per 100,000. For the State as a whole the month of April had the most deaths and the month of August the fewest. The largest number of deaths occurred between the ages of 70 and 79. By sex there were 109 deaths of males and 96 deaths of females.

DIABETES.

Classification.—The Bertillon classification of causes of death gives the following:

28. Diabetes. *This title includes:* Glycosuria.

Frequent complications: Pneumonia; carbuncle; gangrene; hemorrhage and softening of the brain; tuberculosis.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Occurrence in Michigan, 1898.—There were 187 deaths from diabetes mellitus in Michigan during the year 1898, corresponding to a death rate of 8.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 33, which also contains a statement of the age and sex distribution.

Table 33.—Deaths from diabetes mellitus in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	187	8.0	12	19	17	10	20	13	11	11	15	21	22	16
I. Upper peninsula	9	4.3	1	-----	3	-----	1	-----	1	-----	1	1	1	-----
II. Northern counties...	18	6.7	2	2	2	-----	4	1	-----	1	1	2	3	-----
III. Central counties...	32	7.1	2	1	4	2	1	3	-----	5	2	4	5	3
IV. Southern counties...	128	9.0	7	16	8	8	14	9	10	5	11	14	13	13
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
102	85		-----	2	5	7	22	18	20	10	24	39	40	7

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 9.0 per 100,000; and the lowest in the Upper Peninsula, or 4.3 per 100,000. For the State as a whole the month of November had the most deaths and the month of April the fewest. The largest number of deaths occurred between the ages of 70 and 79. By sex there were 102 deaths of males and 85 deaths of females.

OTHER GENERAL DISEASES.

The majority of the deaths here included are of a quite indefinite character, and such as would be probably classified elsewhere if the physicians' statements had been more precise. The total number was 452 for the year, distributed as follows: Pyemia and septicemia, 168; rabies, 1; scrofula, 18; syphilis, 55; exophthalmic goitre, 7; Addison's disease, 20; leukemia, 19; anemia and chlorosis, 107; alcoholism, 47; chronic poisoning, 10. Many of the deaths returned from septicemia were probably due to puerperal sepsis, the physician having omitted the essential particular from his certificate. A certain number may have been due to traumatism, or to operations for injuries. Where the bare statement "septicemia" is made we are obliged, in default of further explanation, to compile the death under the above head. The 18 deaths returned from "scrofula" should be included under tuberculosis of the lymphatic glands, that is to say, if the physicians so reporting meant to return any distinct disease whatever. The term is practically obsolete in scientific statements of cause of death. It is likely that the 55 deaths reported from syphilis are far below the true number of deaths which occurred in the State, as physicians are apt to insert only the immediate cause of death in such cases. In some instances personal notes have been received from physicians containing the correct information. The return very seldom appears except in certificates originating in public institutions, where there is no possibility of the truth being objected to by the relatives of decedents.

The 19 deaths from leukemia and the 107 deaths from anemia and chlorosis, many of them returned as "pernicious anemia," may sometimes conceal other causes. Thus in the case of a tuberculous patient, it is not impossible that death should be ascribed to the emaciation or "anemia," instead of to the cause of the condition, pulmonary tuberculosis. By so doing a physician may sometimes cater to the feelings of friends and also excuse possible past neglect in reporting the presence of the disease to the health officer as required by the State law. The returns of deaths from alcoholism, like those of syphilis, include chiefly the friendless, whose reputation is not the immediate concern of friends and relatives, and do not include the many deaths, classified mostly under the various organic diseases, which are the remote consequence of the abuse of alcohol.

MENINGITIS.

Classification.—The Bertillon classification of causes of death gives the following:

39. Simple meningitis. *This title includes:* Meningitis (without epithet); meningo-encephalitis; pachymeningitis; epidemic cerebrospinal meningitis.

This title does not include: Tubercular meningitis or any of its synonyms (22 B); rheumatismal meningitis (26).

Note.—When epidemic cerebrospinal meningitis prevails, it will be necessary to double this title, giving the disease a special line.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Under meningitis we have followed the suggestion made in the note and have compiled separately deaths returned from simple meningitis and cerebrospinal meningitis as far as they could be distinguished. The returns of meningitis are very unsatisfactory for the purposes of statistical classification and study, as it is not at all certain in any given case just what disease is really meant by the attending physician. There are many returns of meningitis without qualification, cerebral meningitis and spinal meningitis, besides those from cerebrospinal meningitis or cerebrospinal fever. The latter may be regarded, at least provisionally, as definite terms intended to indicate deaths from the specific infectious disease cerebrospinal meningitis, formerly known as "spotted fever," but on inquiry of many of the physicians who reported meningitis without further qualification it was found that many of these deaths were also caused by the specific disease and also that some of those apparently definitely stated as cerebrospinal meningitis were perhaps traumatic or tubercular in character. The whole matter is in a most unsatisfactory condition and probably must remain so until greater precision is attained by physicians in reporting the various form of meningeal affections. It will probably be as satisfactory a method as any to unite the two divisions 39A, Simple meningitis, and 39B, Cerebrospinal meningitis. In the diagram opposite the title page the total number of deaths from meningitis is indicated by one bar with the shaded portion showing the deaths whose specific infectious character was not fully established according to the reports. Deaths from encephalitis, many of which are possibly really meningitis, are also here included.

Occurrence in Michigan, 1898.—There were 417 deaths from meningitis (not definitely specified as cerebrospinal meningitis) in Michigan during the year 1898, corresponding to a death rate of 17.7 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 34; which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 26.5 per 100,000, and the lowest in the northern counties, or 11.2 per 100,000. For the State as a whole the month of March had the most deaths and the month of February the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 221 deaths of males and 196 deaths of females.

CEREBROSPINAL MENINGITIS.

Occurrence in Michigan, 1898.—There were 254 deaths from cerebrospinal meningitis in Michigan during the year 1898, corresponding to a

death rate of 10.8 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 35, which also contains a statement of the age and sex distribution.

Table 34.—Deaths from meningitis in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	417	17.7	32	21	53	42	49	32	22	28	39	33	34	32
I. Upper peninsula	56	26.5	4	1	6	4	5	4	3	6	6	6	7	4
II. Northern counties	30	11.2	2	1	2	2	3	3	2	2	5	1	4	3
III. Central counties	67	14.9	9	4	13	10	12	6	2	2	2	4	2	1
IV. Southern counties	264	18.6	17	15	32	26	29	19	15	18	26	22	21	24
Deaths by sex, 1898.			Deaths by ages, 1898.*											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
221	196		134	250	39	289	39	21	17	19	10	10	9	2

* 1 with age not stated.

Table 35.—Deaths from cerebrospinal meningitis in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	254	10.8	16	14	18	28	20	30	26	24	27	21	13	17
I. Upper peninsula	30	14.2	1	—	1	7	—	4	3	4	2	2	3	3
II. Northern counties	23	8.6	1	2	—	3	1	5	3	4	—	1	—	3
III. Central counties	48	10.6	4	3	6	4	3	3	5	3	6	7	4	—
IV. Southern counties	153	10.8	10	9	11	14	16	18	15	13	19	11	6	11
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
126	128		81	153	28	181	34	19	13	3	3	1	—	—

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 14.2 per 100,000, and the low-

est in the northern counties, or 8.6 per 100,000. For the State as a whole the month of June had the most deaths and the month of November the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 126 deaths of males and 128 deaths of females.

CEREBRAL CONGESTION AND HEMORRHAGE (APOPLEXY).

Classification.—The Bertillon classification of causes of death gives the following:

42. Congestion and hemorrhage of the brain. *This title includes:* Apoplexy; cerebral apoplexy; meningeal apoplexy; serous apoplexy; cerebral atheroma; edema of the brain; cerebral effusion; meningeal hemorrhage; hemorrhage of the spinal cord; cataplexy; apoplectic dementia.

Frequent complications: Hemiplegia; paralysis.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Congestion and hemorrhage of the brain mean little more for statistical purposes than the time honored "apoplexy," which would be preferable on account of its brevity. Besides the number of deaths from cerebral hemorrhage here compiled it is probable that quite a large number of the deaths from paralysis, which is a usual symptom of apoplexy, should also be compiled under this head. For practical purposes, however, it may be as well to handle these two causes together. While apoplexy is classed under diseases of the nervous system, because its effect is manifested by derangement or paralysis of the brain due to rupture of cerebral vessels or to embolism, the cause of apoplexy is generally an affection of the arterial system, so that this cause of death would seem to have equal claims to classification under diseases of the circulatory system. This point simply illustrates the difficulty in making a satisfactory and entirely consistent anatomical classification.

Occurrence in Michigan, 1898.—There were 1,144 deaths from cerebral congestion and hemorrhage (apoplexy) in Michigan during the year 1898, corresponding to a death rate of 48.7 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 36, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, as might have been expected from the greater proportion of elderly persons in the population, namely 57.5 per 100,000, and the lowest in the northern counties, or 22.7 per 100,000. For the State as a whole the month of April had the most deaths and the month of July the fewest. The largest number of deaths occurred between the ages of 70 and 79 years. By sex there were 611 deaths of males and 533 deaths of females.

Diagram XIII, in connection with the table, illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in

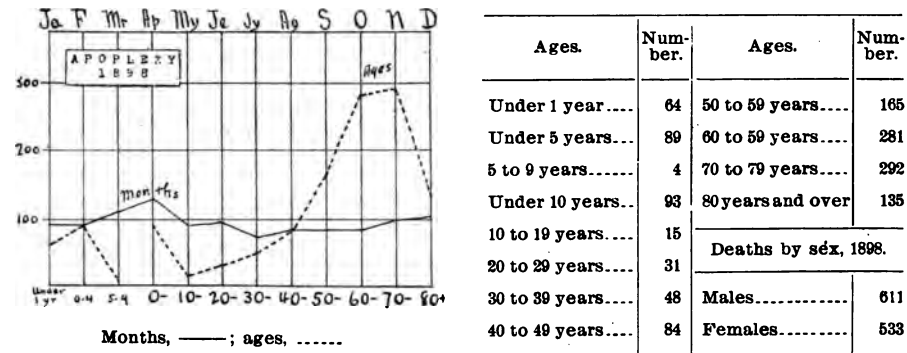
proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

Table 36.—Deaths from cerebral congestion and hemorrhage (apoplexy) in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	1,144	48.7	91	90	112	132	89	96	74	86	83	86	99	106
I. Upper peninsula.....	61	28.9	1	5	11	8	4	4	6	7	4	1	5	5
II. Northern counties.....	61	22.7	7	3	3	7	5	5	8	4	6	2	4	7
III. Central counties.....	206	45.7	18	18	30	25	13	20	14	12	9	13	18	16
IV. Southern counties.....	816	57.5	65	64	68	92	67	67	46	63	64	70	72	78

DIAGRAM XIII.

Deaths by ages, 1898.



PARALYSIS.

Classification.—The Bertillon classification of causes of death gives the following:

44. Paralysis without indicated cause. *This title includes:* Paralysis (without epithet); hemiplegia; paraplegia; facial paralysis; spinal paralysis.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Paralysis, without indicated cause, corresponds roughly to what was formerly called "palsy" in the language of ordinary people, and includes besides the effects of cerebral hemorrhage, which have been alluded to under the preceding title, many obscure diseases of the nervous system

which are attended with interference with the motor functions of the spinal cord or with muscular paralysis. When such diseases as spinal sclerosis, multiple neuritis, etc., are definitely stated from a pathological standpoint they are included under 52C, Other diseases of the nervous system, and probably quite a large number of the deaths included under paralysis could be here placed if more careful statements had been made by the attending physicians. Also certain cases of general paralysis of the insane may be carelessly returned as simply paralysis. The fact that a case of paralysis may be classified under either of the two titles 44, Paralysis, or 52C, Other diseases of the nervous system, according as the mere symptom paralysis is stated, or as the pathological cause is indicated, illustrates the fact of the double basis of classification of nervous diseases. In the classification recommended by the Royal College of Physicians and Surgeons this principle is clearly brought out, and it is recommended that such diseases be classified first by their pathology or anatomical lesions, if known, and that only when this information is wanted that the old symptomalogical division be followed.

Occurrence in Michigan, 1898.—There were 789 deaths from paralysis in Michigan during the year 1898, corresponding to a death rate of 33.6 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 37, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 42.5 per 100,000, and the lowest in the Upper Peninsula, or 5.2 per 100,000. For the State as a whole the month of February had the most deaths and the month of August the fewest. The largest number of deaths occurred between the ages of 70 and 79 years. By sex there were 388 deaths of males and 400 deaths of females.

Table 37.—Deaths from paralysis in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	789	33.6	66	84	69	73	61	61	57	50	64	67	69	68
I. Upper peninsula	11	5.2	2	*	—	1	1	—	1	2	1	1	—	2
II. Northern counties	64	23.8	4	8	3	5	3	8	3	3	8	8	3	8
III. Central counties	111	24.6	8	15	6	10	8	10	4	9	8	12	17	4
IV. Southern counties	603	42.5	52	61	60	57	49	43	49	36	47	46	49	54
Deaths by sex, 1898.*			Deaths by ages, 1898.†											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
388	400		3	6	7	13	6	5	14	36	75	179	281	178

* 1 with sex not stated.

† 2 with age not stated.

CONVULSIONS OF INFANTS.

Classification.—The Bertillon classification of causes of death gives the following:

49. Convulsions of infants. *This title includes:* Eclampsia of infants; infantile spasms; trismus neonatorum.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Here again we have a mere symptom included in what purports to be a scientific classification and illustrating from the large number of deaths compiled thereunder the very unsatisfactory condition of the returns of causes of death. While included under diseases of the nervous system, it is very likely that a large proportion of these deaths is due to gastro-intestinal derangements, of which convulsions are frequently symptoms. Some, however, may be due to true brain diseases or to cerebrospinal meningitis or tubercular meningitis, and in such cases the true cause of death and not the mere symptoms should have been stated.

Occurrence in Michigan, 1898.—There were 516 deaths from infantile convulsions in Michigan during the year 1898, corresponding to a death rate of 22.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 38, which also contains a statement of the age and sex distribution.

Table 38.—Deaths from infantile convulsions in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	516	22.0	53	33	49	56	51	41	42	36	47	30	39	39
I. Upper peninsula.....	61	28.9	6	4	6	9	4	7	3	3	3	5	5	6
II. Northern counties...	54	20.1	5	4	4	5	4	2	3	6	6	4	6	5
III. Central counties...	79	17.5	6	6	10	10	5	8	8	6	3	8	6	3
IV. Southern counties...	322	22.7	36	19	29	32	38	24	28	21	35	13	22	25
Deaths by sex, 1898.*			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
311	204		444	514	2	516	-----	-----	-----	-----	-----	-----	-----	-----

* 1 with sex not stated.

By geographical sections the highest rate of mortality from this cause

occurred in the Upper Peninsula, namely 28.9 per 100,000, and the lowest in the central counties, or 17.5 per 100,000. For the State as a whole the month of April had the most deaths and the month of October the fewest. By sex there were 311 deaths of males and 204 deaths of females.

OTHER DISEASES OF THE NERVOUS SYSTEM.

Besides the diseases of the nervous system given above, the condensed list found in Table 20 includes the following which are more fully stated in the primary tables containing the extended form of the classification (see Table III, p. 20, etc.): encephalitis, 129; cerebral softening, 94; general paralysis of the insane, 95; other forms of insanity, 67; epilepsy, 97; convulsions (of persons over five years of age, not epileptic), 24; tetanus, 20; other diseases of the nervous system, 317. It will thus be seen that there is still a considerable residue of deaths classified in a general way as diseases of the nervous system, without specification of their nature. Many of these are definitely stated in the returns, but owing to the transitional nature of the classification of this group of diseases, are not included under the merely symptomatic classification which forms the basis of the preceding divisions. It is extremely discouraging to attempt to derive any definite knowledge, except in the most general way, from the statistics of this group. As to whether a death shall be returned by a physician from paralysis, apoplexy, softening of the brain, organic brain disease, rupture of blood vessel in brain, embolus or thrombus of brain, or arteriosclerosis may frequently depend not so much upon the nature of the case as upon the habitual manner in which the physician is accustomed to view it. It would seem to be a question of pure chance, in certain instances of sudden death in which no post-mortem examination has been made, whether the death is ascribed to apoplexy or heart disease.

ORGANIC HEART DISEASES.

Classification.—The Bertillon classification of causes of death gives the following:

57. Organic diseases of the heart. *This title includes:* Aortic, mitral, tricuspid, cardiac, or valvular affections or lesions; insufficiency; stenosis; Corrigan's disease; cardiac cachexia; hypertrophy of the heart; dilatation of the heart; cardiectasis; steatosis of the heart; degeneration of the heart; cardiopathy; cardiosclerosis; cardiovascular sclerosis; cardiomalacia; persistent foramen ovale; palpitation of the heart; asystole; cardiac asthma; blue baby.

This title does not include: Heart affections (undetermined character) (66).

Frequent complications: Dropsy; bronchitis and pneumonia; albuminuria; embolism; thrombosis.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Under organic diseases of the heart we have a large number of deaths, the largest in fact from any single title in the condensed classification except pulmonary tuberculosis. These deaths are from a great variety of heart affections, many of them of indefinite character, and quite a large proportion resulting from or connected with other diseases, such

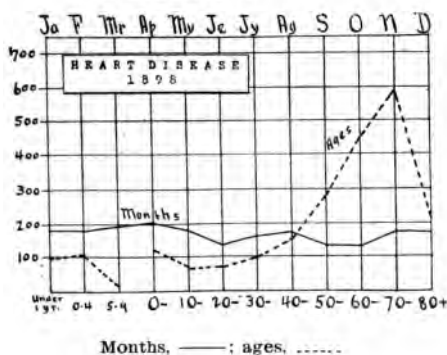
as rheumatism or Bright's disease. Acute cardiac affections occurring in the course of rheumatism are classified under the latter term, but valvular diseases and other organic changes of the heart from rheumatism are classified under heart disease. We may note that in addition to the number of deaths compiled under heart disease there were no less than 349 deaths from "heart failure," which are not placed under this title or under diseases of the circulatory system, but are left under the ill-defined causes. The reason for this is that while heart failure at one time indicated some disease of the heart, the term has come latterly to be so abused as to be nearly or quite meaningless, and as the heart always fails before death from whatever disease, so the statement of heart failure means little more than that death occurred. It is possible that some small portion of these deaths was associated with actual cardiac disease.

Occurrence in Michigan, 1898.—There were 2,016 deaths from organic heart diseases (not including endocarditis, pericarditis and angina pectoris) in Michigan during the year 1898, corresponding to a death rate of 85.8 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 39, which also contains a statement of the age and sex distribution.

Table 39.—Deaths from organic heart diseases in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	2,016	85.8	182	180	195	205	181	132	160	171	130	133	174	173
I. Upper peninsula	93	44.0	5	9	5	11	9	4	8	8	7	7	14	6
II. Northern counties	164	61.1	15	15	13	14	13	15	16	16	15	7	9	16
III. Central counties	334	74.0	29	35	28	37	31	18	20	37	22	21	20	36
IV. Southern counties	1,425	100.4	133	121	149	143	128	95	116	110	86	98	131	115

DIAGRAM XIV.



Deaths by ages, 1898.

Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year.....	97	50 to 59 years.....	281
Under 5 years....	106	60 to 69 years.....	448
5 to 9 years.....	13	70 to 79 years.....	588
Under 10 years..	119	80 years and over	210
10 to 19 years....	58	Deaths by sex, 1898.	
20 to 29 years....	63		
30 to 39 years....	93		
40 to 49 years....	152		
		Males.....	1,116
		Females.....	900

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 100.4 per 100,000, and the lowest in the Upper Peninsula, or 44.0 per 100,000. For the State as a whole the month of April had the most deaths and the month of September the fewest. The largest number of deaths occurred between the ages of 70 and 79 years. By sex there were 1,116 deaths of males and 900 deaths of females.

Diagram XIV, in connection with the table, illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

OTHER DISEASES OF THE CIRCULATORY SYSTEM.

In addition to the 2,016 deaths returned from organic heart diseases, which term includes valvular disease of the heart of various kinds as well as a great number simply stated as "heart disease," there were 524 other deaths compiled under diseases of the circulatory system, as follows: pericarditis, 109; endocarditis, 74; angina pectoris, 143; diseases of the arteries, including aneurism, 74; embolism, 19; varices, hemorrhoids, 3; phlebitis, 12; lymphangitis, 2; other diseases of the lymphatics, 10; hemorrhage, 60; other circulatory diseases, 18. Pericarditis, endocarditis and angina pectoris may properly be added to the number returned from organic heart disease to exhibit the total deaths from diseases of the heart. As many cases of heart disease result from rheumatism, it may be well to remember that deaths from pericarditis, endocarditis or heart disease occurring in the course of an acute attack of rheumatic fever are classified under the latter; when the results of rheumatism, but not reported as the cause of death during the immediate progress of the disease, they are compiled under the disease of the heart. Some of the other terms included under this group are of an indefinite character, as hemorrhage, which is only placed here when the seat or cause of the hemorrhage is unknown. Some of the 60 deaths so reported for 1898 may be due to hemorrhage of the lungs from pulmonary consumption.

BRONCHITIS.

Classification.—The Bertillon classification of causes of death gives the following:

69. Acute bronchitis. *This title includes:* Capillary bronchitis; trachitis; tracheo-bronchitis; broncho-alveolitis.

This title does not include: Broncho-pneumonia (71); specific bronchitis or any other synonym of tuberculosis of the lungs (see 22 A); fetid bronchitis (75); summer bronchitis (76).

Note.—See note under No. 70.

70. Chronic Bronchitis. *This title includes:* Catarrhal bronchitis; catarrh (without epithet); bronchial, pituitary, pulmonary or suffocative catarrh; bronchorrhea; dilatation of the bronchi; bronchiectasis.

This title does not include: Fetid bronchitis (75).

Note.—Certificates of death in which the word *bronchitis* is not definitely stated to be acute or chronic should be referred to the physician for an exact statement. When it is not possible to obtain one, deaths of children should be classified under No. 69, and deaths of adults and old persons under No. 70.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

In the condensed classification acute and chronic bronchitis are given together because it is practically very difficult or almost impossible to distinguish them in the returns. Dr. Bertillon makes a distinction on the basis of age, but as he fails to state the exact age on which the separation is made the matter is left somewhat in doubt. In the compilation of this report deaths of children under five years of age from bronchitis without further specification have been put under acute bronchitis.

Occurrence in Michigan, 1898.—There were 643 deaths from acute and chronic bronchitis in Michigan during the year 1898, corresponding to a death rate of 27.4 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 40, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 45.4 per 100,000, and the lowest in the central counties, or 21.6 per 100,000. For the State as a whole the month of March had the most deaths and the month of August the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 317 deaths of males and 326 deaths of females.

Table 40.—Deaths from bronchitis* in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	643	27.4	76	63	80	70	63	36	38	27	30	39	60	61
I. Upper peninsula.....	96	45.4	11	3	7	7	17	8	6	3	7	9	11	7
II. Northern counties...	73	27.2	9	11	8	6	3	4	3	4	4	5	7	9
III. Central counties...	97	21.6	12	16	12	11	7	3	4	3	4	4	11	10
IV. Southern counties...	377	26.6	44	33	53	46	36	21	25	17	15	21	31	35
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
317	326		229	320	6	326	5	6	10	20	33	64	109	70

* Including acute bronchitis and chronic bronchitis.

BRONCHO-PNEUMONIA.

Classification.—The Bertillon classification of causes of death gives the following:

71. Broncho-pneumonia. *This title does not include: Capillary bronchitis (69).*

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Broncho-pneumonia is an intermediate term between bronchitis and pneumonia, and, as has been suggested, is of use chiefly to cover uncertainty of diagnosis. If there is actual pneumonia the deaths should be compiled under the following title. It is difficult to see why capillary bronchitis should not be included here or preferably under pneumonia proper instead of being referred to bronchitis.

Occurrence in Michigan, 1898.—There were 242 deaths from broncho-pneumonia in Michigan during the year 1898, corresponding to a death rate of 10.3 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 41, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 26.0 per 100,000, and the lowest in the central counties, or 8.0 per 100,000. For the State as a whole the month of March had the most deaths and the month of August the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 127 deaths of males and 115 deaths of females.

Table 41.—Deaths from broncho-pneumonia in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	242	10.3	28	34	36	33	34	14	8	6	7	15	16	21
I. Upper peninsula	55	26.0	4	5	4	5	6	6	2	2	-----	6	7	8
II. Northern counties	26	9.6	3	4	4	3	-----	-----	-----	2	-----	4	4	2
III. Central counties	36	8.0	4	4	8	6	4	2	-----	-----	2	1	1	4
IV. Southern counties	125	8.8	17	21	20	19	14	6	6	2	5	4	4	7
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
127	115		118	167	12	179	3	4						

PNEUMONIA.

Classification.—The Bertillon classification of causes of death gives the following:

72. Pneumonia. *This title includes:* Acute pulmonary catarrh; interstitial pneumonia; cirrhosis of the lung; pulmonary sclerosis; spleno-pneumonia; pneumonia of the apex; peripneumonia; pneumopericarditis; typhoid pneumonia.

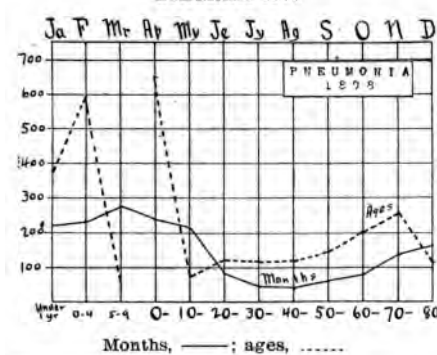
This title does not include: Caseous pneumonia (22 A); specific pneumonia (22 A); bacillary pneumonia (22 A), or any other synonym of tuberculosis of the lungs (see 22 A); pleuro-pneumonia (73); pulmonary congestion (74).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Table 42.—Deaths from pneumonia in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	1,805	76.8	222	234	275	238	213	88	49	43	64	81	136	162
I. Upper peninsula	150	71.0	15	12	17	20	11	12	8	4	6	11	17	17
II. Northern counties	168	62.6	27	22	23	20	21	5	4	3	5	11	8	19
III. Central counties	287	63.6	37	40	41	43	37	19	9	6	3	9	17	26
IV. Southern counties	1,200	84.6	143	160	194	155	144	52	28	30	50	50	94	100

DIAGRAM XV.



Deaths by ages, 1898.

Ages.	Number.	Ages.	Number.
Under 1 year....	364	50 to 59 years....	146
Under 5 years....	593	60 to 69 years....	203
5 to 9 years....	56	70 to 79 years....	255
Under 10 years..	649	80 years and over	119
10 to 19 years....	76	Deaths by sex, 1898.	
20 to 29 years....	120	Males.....	992
30 to 39 years....	115	Females.....	813
40 to 49 years....	119		

This title includes practically all deaths from inflammation of the lungs, except such as occur in the course of specific infectious diseases and form a part of their proper pathology. Thus tuberculous pneumonia, diphtheritic pneumonia and typhoid pneumonia would be elsewhere classified. While it would seem very desirable on theoretical grounds that the divisions of lobar or croupous pneumonia and catarrhal pneumonia should be recognized, practically the accuracy of the returns is not such

as to warrant even this elementary pathological division. Congestion of the lungs as employed in this country is a synonym of pneumonia and the deaths from this cause should probably be therein included.

Occurrence in Michigan, 1898.—There were 1,805 deaths from pneumonia in Michigan during the year 1898, corresponding to a death rate of 76.8 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 42, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 84.6 per 100,000, and the lowest in the northern counties, or 62.6 per 100,000. For the State as a whole the month of March had the most deaths and the month of August the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 992 deaths of males and 813 deaths of females.

Diagram XV, in connection with the table, illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

PLEURISY.

Classification.—The Bertillon classification of causes of death gives the following:

73. Pleurisy. *This title includes:* Pleuro-pneumonia; pneumo-pleurisy; pleuro-pericarditis; pleuritic or thoracic effusion; hydro-pneumo-thorax; pyothorax; pleural abscess; pneumo-pyothorax; hemothorax; thoracentesis; empyema; pulmonary adhesion.

This title does not include: Pleurodynia (77 B); pneumo-thorax (77 B).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

It has been ascertained that the great majority of cases of pleurisy are tubercular in character, hence it might seem desirable that deaths from this cause should be compiled or at least considered with the deaths from pulmonary tuberculosis. It would also seem desirable that pleuro-pneumonia should be compiled under the cause presenting the most serious character, and hence under pneumonia rather than pleurisy.

Occurrence in Michigan, 1898.—There were 107 deaths from pleurisy in Michigan during the year 1898, corresponding to a death rate of 4.5 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 43, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause

occurred in the southern counties, namely 5.7 per 100,000, and the lowest in the northern counties, or 0.7 per 100,000. For the State as a whole the month of March had the most deaths and the months of January and October the fewest. The largest number of deaths occurred between the ages of 60 and 69 years. By sex there were 44 deaths of males and 63 deaths of females.

Table 43.—Deaths from pleurisy in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	107	4.5	3	12	18	15	14	4	5	2	6	3	8	17
I. Upper peninsula.....	8	3.8	—	2	1	—	—	—	3	—	1	—	—	1
II. Northern counties.....	2	0.7	—	—	—	1	1	—	—	—	—	—	—	—
III. Central counties.....	16	3.5	—	2	3	2	1	1	1	—	—	—	3	3
IV. Southern counties.....	81	5.7	3	8	14	12	12	3	1	2	5	3	5	13

Deaths by sex, 1898.		Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
44	63	1	6	2	8	6	12	11	16	13	25	10	6

OTHER DISEASES OF THE RESPIRATORY SYSTEM.

The 439 deaths not included under the above-stated divisions of this group include 2 deaths from nasal disease, 43 from diseases of the larynx and thyroid, 159 from "congestion of the lungs," 5 from gangrene of the lungs, 111 from asthma and emphysema, and 119 from various pulmonary affections or indefinite returns of pulmonary disease. Some of the latter, particularly abscess of the lungs, may be in reality consumption. Other deaths, as those from edema of the lungs, occur in the course of various organic diseases, as of the heart or kidneys, which should have been stated as the cause of death and not the mere symptom. "Congestion of the lungs" sometimes means passive congestion, or pulmonary edema, and again means an actual inflammation or pneumonia. This term should never be used in certificates of death from its ambiguity, but the Bertillon classification has wisely provided a separate place for it as physicians will persist, until better instructed, in returning the statement.

DISEASES OF THE STOMACH.

Classification.—The Bertillon classification of causes of death gives the following:

80. Ulcer of the Stomach. *This title includes: *Ulcus rotundum* (round ulcer of the stomach).*

Frequent complications: Hematemesis, perforation of the stomach, peritonitis.

81. Other diseases of the stomach (cancer excluded). *This title includes:* Dilatation of the stomach; dyspepsia; apepsia; gastritis; gastro-hepatitis; foreign body in the stomach; gastrotomy; non-traumatic perforation of the stomach; gastralgia; *vertigo a stomacho læso*; catarrh of the stomach; gastrorrhæa; indigestion. Also the following in which the nature of the disease affecting the stomach is not clearly defined: Organic lesion of the stomach; gastrorrhagia; hematemesis; hemorrhage from the stomach.

This title does not include: Gastro-enteritis (82 or 83 according to age).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Quite a large variety of causes of death are compiled under stomach diseases, many of them of rather indefinite character. The term indigestion which occurs among these may often refer, and especially in children, to general gastro-intestinal indigestion or cholera infantum. Other terms used above will suggest the cancerous nature of the diseases represented by them.

Occurrence in Michigan, 1898.—There were 484 deaths from diseases of the stomach in Michigan during the year 1898, corresponding to a death rate of 20.6 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 44, which also contains a statement of the age and sex distribution.

Table 44.—Deaths from stomach diseases in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	484	20.6	48	35	48	40	43	45	44	42	41	39	33	26
I. Upper peninsula	34	16.1	1	2	3	2	5	6	3	5	2	1	3	1
II. Northern counties...	52	19.4	7	5	7	2	-----	7	1	4	9	2	6	2
III. Central counties...	85	18.8	11	6	5	8	10	6	7	5	11	6	6	4
IV. Southern counties...	313	22.1	29	22	33	28	28	26	33	28	19	30	18	19
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.	
241	243	95	112	11	123	4	13	30	39	62	89	83	41	

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 22.1 per 100,000, and the lowest in the Upper Peninsula, or 16.1 per 100,000. For the State as a whole the months of January and March had the most deaths and the month

of December the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 241 deaths of males and 243 deaths of females.

DIARRHEA AND ENTERITIS.

Classification.—The Bertillon classification of causes of death gives the following:

182. Infantile diarrhea; athrepsia. *This title includes:* Gastro-enteritis or gastro-colitis of infants; infantile enteritis; cholera infantum.

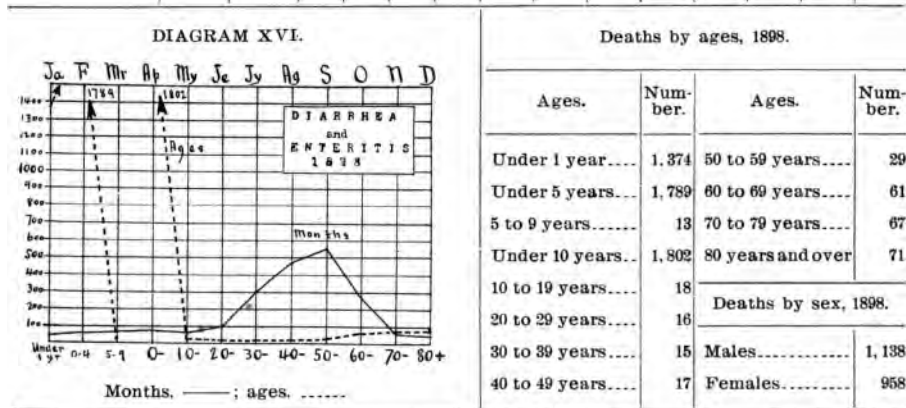
83. Diarrhea and enteritis. *This title includes:* Gastro-enteritis or gastro-colitis of adults; enteritis of adults; diarrhea of adults; lientery; intestinal ulcerations; colitis; intestinal colic; flatulent colic; inflammatory colic.

This title does not include: Tubercular enteritis (22 E).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Table 45.—Deaths from diarrhea and enteritis in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	2,096	89.2	45	55	60	72	65	95	300	471	548	265	69	51
I. Upper peninsula	295	139.5	3	8	4	15	9	14	27	91	78	30	6	10
II. Northern counties	273	101.7	8	7	8	10	15	14	28	60	83	31	5	4
III. Central counties	355	78.7	7	7	6	13	11	8	25	72	135	50	9	12
IV. Southern counties	1,173	82.7	27	33	42	34	30	59	220	248	252	154	49	25



Here again a division has been made by Dr. Bertillon on the basis of the ages of decedents, while at the same time no light has been given as to the exact line of demarcation. In the present report all deaths of infants

and children from diarrheal diseases under five years of age have been placed under 82, Infantile diarrhea, and those over five years under 83, Diarrhea and enteritis.

Occurrence in Michigan, 1898.—There were 2,096 deaths from diarrhea and enteritis at all ages in Michigan during the year 1898, corresponding to a death rate of 89.2 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 45, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 139.5 per 100,000 and the lowest in the central counties, or 78.7 per 100,000. For the State as a whole the month of September had the most deaths and the month of January the fewest. The largest number of deaths occurred under the age of 5 years. By sex there were 1,138 deaths of males and 958 deaths of females.

Diagram XVI, in connection with the table, illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

DYSENTERY.

Classification.—The Bertillon classification of causes of death gives the following:

84. Dysentery. *This title includes:* Dysentery of Cochin China; epidemic dysentery.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

It is probable that many of the deaths returned from dysentery in this State do not belong to the specific form of the disease, but are rather cases of diarrhea and enteritis with hemorrhage.

Occurrence in Michigan, 1898.—There were 150 deaths from dysentery (so reported) in Michigan during the year 1898, corresponding to a death rate of 6.4 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 46, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the northern counties, namely 9.6 per 100,000, and the lowest in the Upper Peninsula, or 2.4 per 100,000. For the State as a whole the month of September had the most deaths and the month of June the

fewest, none being returned. The largest number of deaths occurred under the age of 5 years, which suggests the possible confusion of this cause with infantile diarrhea. By sex there were 72 deaths of males and 78 deaths of females.

Table 46.—Deaths from dysentery in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State.....	150	6.4	3	4	3	7	2	.....	13	29	47	37	3	2
I. Upper peninsula.....	5	2.4	1	.....	.....	1	.....	.....	.....	1	2	.....	.....	.....
II. Northern counties.....	26	9.6	.....	1	.....	2	.....	.....	3	8	6	6	.....	.....
III. Central counties.....	22	4.9	.....	1	.....	1	.....	.....	1	3	8	7	.....	1
IV. Southern counties.....	97	6.8	2	2	3	3	2	.....	9	17	31	24	3	1
Deaths by sex, 1898.			Deaths by ages, 1898.*											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
72	78		23	52	3	55	2	3	2	5	12	14	33	23

* 1 age not stated.

DISEASES OF THE LIVER.

Classification.—The Bertillon classification of causes of death gives the following:

88. Icterus gravis. *This title includes:* Acute yellow atrophy of the liver; parenchymatous hepatitis; Weil's disease.

This title does not include: Icterus or jaundice (without epithet) (92); chronic jaundice (92); *icterus neonatorum* (138).

89. Hydatid tumors of the liver. *This title includes the following diseases of which the seat is not indicated:* Hydatid cyst; hydatids; echinococci.

90. Cirrhosis of the liver. *This title includes:* Cirrhosis (without epithet); alcoholic cirrhosis; interstitial cirrhosis; amyloid or fatty degeneration of the liver; steatosis of the liver; alcoholic, or interstitial, or chronic hepatitis.

This title does not include: Organic lesion of the liver (92); hypertrophy of the liver (92).

Frequent complications: Dropsy; hemorrhage; pneumonia; tuberculosis.

91. Biliary calculi. *This title includes:* Hepatic calculi; biliary lithiasis; hepatic colic.

92. Other diseases of the liver. *This title includes:* Hepatitis; acute hepatitis; angio-cholitis; cholecystitis; hepatocystitis; choluria. *It also includes the following ill-defined diseases:* Organic disease of the liver; tumor of the liver; hypertrophy of the liver; acholia; cholemia; icterus; chronic icterus; jaundice; hepatic congestion.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Liver diseases represent, perhaps, more of conjecture and uncertainty of diagnosis than any other class of diseases, and it is quite doubtful whether very much reliance can be placed upon their statistics.

Occurrence in Michigan, 1898.—There were 477 deaths from diseases of the liver in Michigan during the year 1898, corresponding to a death rate of 20.3 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 47, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 22.5 per 100,000, and the lowest in the Upper Peninsula, or 13.7 per 100,000. For the State as a whole the month of March had the most deaths and the month of January the fewest. The largest number of deaths occurred between the ages of 60 and 69 years. By sex there were 261 deaths of males and 216 deaths of females.

Table 47.—Deaths from liver diseases in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	477	20.3	24	30	55	42	54	48	25	39	51	32	35	40
I. Upper peninsula	29	13.7	3	-----	2	3	4	4	2	3	3	4	-----	1
II. Northern counties	50	18.6	3	2	4	4	8	8	3	1	5	3	4	5
III. Central counties	79	17.5	3	3	11	5	8	6	5	11	8	5	5	9
IV. Southern counties	319	22.5	15	25	38	30	34	30	16	24	35	20	27	25

Deaths by sex, 1898.		Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
261	216	16	26	2	28	8	16	28	65	98	114	94	26

PERITONITIS.

Classification.—The Bertillon classification of causes of death gives the following:

93. Inflammatory peritonitis (non-puerperal). *This title includes:* Peritonitis (without epithet); chronic peritonitis; peritoneal adhesion; epiploitis; metropéritonitis; pelvic peritonitis.

This title does not include: Tubercular peritonitis (22 C); cancer of the peritoneum (25 G); puerperal peritonitis (120); rheumatismal peritonitis (26).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Under peritonitis it is not unlikely that some cases of tubercular peritonitis (not specified as such) may be included and also deaths from puerperal septicemia, which the physicians have failed to properly record. Wherever peritonitis results from other intestinal affection, as hernia, strangulation of the bowels, etc., deaths have been compiled under the primary causes.

Occurrence in Michigan, 1898.—There were 284 deaths from peritonitis in Michigan during the year 1898, corresponding to a death rate of 12.1 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 48, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 14.0 per 100,000, and the lowest in the Upper Peninsula, or 8.5 per 100,000. For the State as a whole the month of January had the most deaths and the month of February the fewest. The largest number of deaths occurred between the ages of 20 and 29 years. By sex there were 108 deaths of males and 176 deaths of females. The age and sex distribution indicate the probable inclusion of some deaths from puerperal peritonitis not properly specified by the reporting physicians.

Table 48.—Deaths from peritonitis in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	284	12.1	31	16	24	28	23	19	29	22	24	22	25	21
I. Upper peninsula	18	8.5	2	-----	1	3	4	-----	1	1	1	2	1	2
II. Northern counties	26	9.6	1	2	4	2	1	-----	3	3	4	-----	2	4
III. Central counties	42	9.3	2	3	2	4	4	4	6	4	3	5	3	2
IV. Southern counties	198	14.0	26	11	17	19	14	15	19	14	16	15	19	13

Deaths by sex, 1898.		Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
108	176	20	39	13	52	44	66	45	18	13	22	20	4

ILIAC ABSCESS.

Classification.—The Bertillon classification of causes of death gives the following:

95. Abscess of the iliac fossa. *This title includes:* Iliac phlegmon or abscess; typhlitis; perityphlitis; typhlo-dicliditis; appendicitis.

This title does not include: Abscess of the pelvis (107); periuterine abscess (107); pelvic suppuration (107).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Under this title may be found many deaths which would probably for the most part have been compiled under the preceding title, peritonitis, a few years ago. It may be perhaps doubtful whether some of the cases of appendicitis, unless verified by operation, are actually due to this cause.

Occurrence in Michigan, 1898.—There were 165 deaths from iliac abscess (largely returned as appendicitis) in Michigan during the year 1898, corresponding to a death rate of 7.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 49, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 8.0 per 100,000, and the lowest in the northern counties, or 4.5 per 100,000. For the State as a whole the month of June had the most deaths and the months of May and October the fewest. The largest number of deaths occurred between the ages of 10 and 19 years. By sex there were 112 deaths of males and 53 deaths of females.

Table 49.—Deaths from iliac abscess (appendicitis) in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	165	7.0	13	11	15	16	9	19	16	15	13	9	15	14
I. Upper peninsula	15	7.1	1	3	—	2	—	1	1	1	2	—	1	3
II. Northern counties	12	4.5	1	—	1	1	1	1	—	2	2	1	1	1
III. Central counties	24	5.3	1	1	1	4	1	6	5	1	1	2	—	1
IV. Southern counties	114	8.0	10	7	13	9	7	11	10	11	8	6	13	9

Deaths by sex, 1898.		Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
112	53	—	5	17	22	52	33	24	18	7	7	1	1

OTHER DISEASES OF THE DIGESTIVE SYSTEM.

In addition to the foregoing list of diseases affecting the alimentary canal, 450 other deaths were compiled from causes of this group. Chief among these were hernia and intestinal obstruction, which were together responsible for 254 deaths. Diseases of the mouth, including thrush, stomatitis, etc., caused 31; diseases of the pharynx and esopha-

gus, 36; other more or less definitely specified diseases of the intestines, 117; and other diseases of the digestive system, 12. About the only class of deaths included in the last title, which is of very infrequent use, is non-malignant disease of the pancreas. It is sometimes marvelous to observe with what accuracy affections of this gland are reported, and without the aid of any post-mortem to verify the diagnosis.

BRIGHT'S DISEASE.

Classification.—The Bertillon classification of causes of death gives the following:

97. Bright's disease. *This title includes:* Chronic, albuminous, interstitial or parenchymatous nephritis; albuminuria; amyloid or fatty degeneration of the kidneys; amyloid kidney; steatosis of the kidneys; renal sclerosis. *It also includes the following indefinite statements:* Uremia; uremic convulsions; uremic delirium.

This title does not include: Organic diseases of the kidneys (100); puerperal uremia (121); cardiac albuminuria (57).

Frequent complications: Anasarca; dropsy; convulsions; hemorrhage; cerebral apoplexy; pneumonia.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities), p. 78.

Bright's disease contains a vast number of more or less definite forms of death from kidney lesions often associated with chronic heart diseases. It is frequently difficult to say whether the heart disease or the kidney disease should be considered the cause of death. Besides the number of deaths here compiled it is probable that a certain portion of the deaths from dropsy, a common symptom of inflammation of the kidneys, properly belong under this title.

Occurrence in Michigan, 1898.—There were 915 deaths from Bright's disease in Michigan during the year 1898, corresponding to a death rate of 38.9 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 50, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 45.5 per 100,000, and the lowest in the northern counties, or 21.6 per 100,000. For the State as a whole the month of March had the most deaths and the month of August the fewest. The largest number of deaths occurred between the ages of 60 and 69 years, exceeding by only one death the number in the following period, 70-79; the latter shows much the higher death rate in Diagram VI, p. lxxxvii. By sex there were 570 deaths of males and 345 deaths of females.

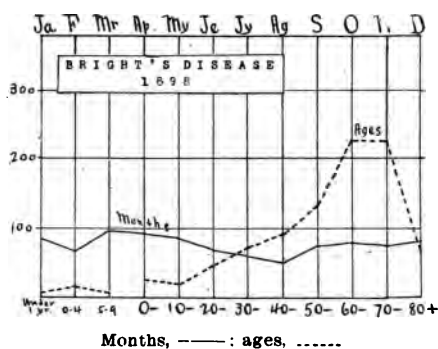
Diagram XVII in connection with the table illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths

in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

Table 50.—Deaths from Bright's disease in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	915	38.9	85	69	96	90	86	68	59	50	74	80	75	83
I. Upper peninsula	61	28.9	6	4	4	7	6	6	2	2	5	7	7	5
II. Northern counties	58	21.6	7	5	5	5	2	5	2	4	7	6	4	6
III. Central counties	150	33.2	12	12	16	16	17	12	10	11	14	10	8	12
IV. Southern counties	646	45.5	60	48	71	62	61	45	45	33	48	57	56	60

DIAGRAM XVII.



Deaths by ages, 1898.

Ages.	Num-ber.	Ages.	Num-ber.
Under 1 year....	7	50 to 59 years....	134
Under 5 years....	17	60 to 69 years....	228
5 to 9 years.....	8	70 to 79 years....	227
Under 10 years..	25	80 years and over	69
10 to 19 years....	21	Deaths by sex, 1898.	
20 to 29 years....	47		
30 to 39 years....	72	Males.....	570
40 to 49 years....	90	Females.....	345

OTHER DISEASES OF THE GENITO-URINARY SYSTEM.

Besides the 915 deaths returned from Bright's disease, chronic parenchymatous or interstitial nephritis, albuminuria, uremia, and other more or less definite synonyms of chronic nephritis, there were 537 other deaths returned from various diseases of the kidneys, bladder and genital organs. Among these were 96 deaths from acute nephritis, some of which ought to have been classified under the acute diseases, such as scarlet fever, causing the same, had the physicians made more complete reports. Various other diseases of the kidneys caused 104 deaths; vesical calculi, 6; diseases of the bladder, mostly cystitis, 144; diseases of the prostate, orchitis, etc., 59; uterine tumors, not specified as cancerous, 21; other uterine diseases, some of which ought to have been specified as puerperal in character, 20; ovarian tumors, 27; other diseases of the female genital organs, 60. Among the latter are pelvic abscess and salpingitis, together with deaths after operations for the removal of pus tubes. Strictly deaths of this class ought to be classed under gonorrhea, and placed among the infectious diseases.

PUERPERAL DISEASES.

Classification.—The Bertillon classification of causes of death gives the following:

116. Accidents of pregnancy. *This title includes:* Abortion or miscarriage (death of the mother); hemorrhage during pregnancy; uncontrollable vomiting; rupture of tubal pregnancy.

117. Puerperal hemorrhage. *This title includes:* Puerperal metrorrhagia.

118. Other accidents of childbirth. *This title includes:* Dystocia; Caesarian section; rupture of the uterus; metrorrhagia; laceration or rupture of the perineum; perineorrhaphy; placenta prævia; retention or detachment of the placenta; apoplexy of the placenta; cephalotripsy or embryotomy (adult female); symphysiotomy.

119 A. Puerperal septicemia. *This title includes:* Puerperal fever; puerperal infection.

This title does not include: Septicemia (without epithet) (14).

119 B. Puerperal phlebitis. *This title includes:* Puerperal lymphangitis.

120. Puerperal metropéritonitis. *This title includes:* Puerperal peritonitis.

121. Puerperal albuminuria and eclampsia. *This title includes:* Puerperal uremia; nephritis of pregnancy; eclampsia gravidarum; epileptiform convulsions of women in pregnancy; puerperal tetanus.

122. Puerperal phlegmasia alba dolens.

Frequent complications: Gangrene; embolism.

123. Other accidents of childbearing—Sudden death. *This title includes:* Puerperal embolism; puerperal thrombosis; sudden death during the puerperium; death after labor (without other explanation).

This title does not include: Sudden death (non-puerperal) (157); puerperal scarlatina (6).

124. Puerperal diseases of the breast. *This title includes:* Fissure of the nipple (puerperal); abscess of the breast (puerperal); fistula of the breast (puerperal or unspecified).

Note.—It sometimes happens that the physician neglects to state the puerperal character of the disease. Hence the following rule is laid down for statistical offices: In every such case in which an adult female is reported as having died of a disease which might be of puerperal character, the certificate of death should be returned to the signer for explanation as to whether the disease was puerperal or not. These diseases are the following: Peritonitis; pelvic peritonitis; metropéritonitis; septicemia; hemorrhage; metrorrhagia; eclampsia; phlegmasia alba dolens; phlebitis; lymphangitis; embolism; sudden death; abscess of the breast.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

This group is intended to include all diseases incident to childbirth, but unfortunately some physicians fail to include this important element in their statements of causes of death. In all deaths from septicemia, peritonitis, etc., where it seems possible that child birth may have been the cause, letters are sent to physicians and in most cases satisfactory returns are received.

Occurrence in Michigan, 1898.—There were 387 deaths from puerperal diseases in Michigan during the year 1898, corresponding to a death rate of 16.5 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 51, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 25.5 per 100,000, and the lowest in the southern counties, or 12.5 per 100,000. For the State as a whole the month of April had the most deaths and the month of October the fewest. The largest number of deaths occurred between the ages of 20 and 29 years.

Table 51.—Deaths from puerperal diseases in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	387	16.5	30	38	39	44	40	36	30	21	21	20	29	39
I. Upper peninsula	54	25.5	3	5	3	4	6	3	7	3	2	6	5	7
II. Northern counties	61	22.7	4	7	6	13	3	8	3	4	3	3	3	4
III. Central counties	95	21.1	11	7	11	9	11	12	4	3	6	3	10	8
IV. Southern counties	177	12.5	12	19	19	18	20	13	16	11	10	8	11	20

Deaths by sex, 1898.		Deaths by ages, 1898.											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
	387	-----	-----	-----	-----	38	168	144	37	-----	-----	-----	-----

DISEASES OF THE SKIN AND CELLULAR TISSUES.

Classification.—The Bertillon classification of causes of death gives the following:

125. Erysipelas. *This title includes:* All erysipelas, either medical or surgical, and whatever its situation; gangrenous or phlegmonous erysipelas.

126. Gangrene. *This title includes:* Mortification; sphacelus; gangrene—dry, senile or of the extremities; gangrene of the mouth; gangrene of the vulva, etc.; noma; Raymond's disease.

This title does not include: Gangrene of the lungs (75); hernial gangrene (86); gangrenous erysipelas (126).

127. Carbuncle. *This title includes:* Furuncle; Biskra's boil or button.

128. Phlegmon. acute abscess. *This title includes:* Abscess (without epithet); phlegmonous tumor; adeno-phlegmon; suppurative adenitis; bubo (without epithet); suppurating bubo; diffuse phlegmon; panaris; paronychia; mediastinal abscess; pus cavity (without other indication).

This title does not include: Bacillary abscess (22 D); abscess of the pharynx, throat or retropharyngeal abscess (79 A); abscess of the liver (92); abscess of the iliac fossa (95); pelvic abscess (107); abscess of the prostate (104); urinary abscess (103 B); periuterine abscess (107); non-puerperal abscess of the breast (115); puerperal abscess of the breast (124); cold abscess (131); symptomatic abscess (131); ossifluent abscess (131); angioleucitis (63).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

The first disease in this group, erysipelas, should by common consent be included among infectious diseases. Many of the other causes included are of very little importance as causes of death, forming rather a part of the classification of causes of illness.

Occurrence in Michigan, 1898.—There were 227 deaths from diseases of the skin and cellular tissues in Michigan during the year 1898, corres-

ponding to a death rate of 9.7 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 52, which also contains a statement of the age and sex distribution.

The largest number of deaths occurred under the age of 10 years. By sex there were 126 deaths of males and 101 deaths of females.

Table 52.—Deaths from skin diseases in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	227	9.7	14	11	26	20	22	16	19	12	19	21	19	28
I. Upper peninsula	9	4.3	1	-----	-----	-----	1	2	1	1	-----	-----	-----	3
II. Northern counties	22	8.2	-----	1	2	2	5	3	1	1	2	2	1	2
III. Central counties	48	10.6	3	2	5	9	4	2	7	-----	1	3	4	8
IV. Southern counties	148	10.4	10	8	19	9	12	9	10	10	16	16	14	15
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
126	101		37	50	1	51	8	10	4	14	19	38	49	34

DISEASES OF THE LOCOMOTOR SYSTEM.

Classification.—The Bertillon classification of causes of death gives the following:

130. Pott's disease. *This title includes:* Caries of the vertebræ; spine disease; vertebral polyarthritis.

Frequent complications: Cold abscess; paraplegia; visceral tuberculosis.

131. Cold abscess; symptomatic abscess. *This title includes:* Ossifluent abscess.

132. Other diseases of the bones. *This title includes:* Periostitis; osteitis; osteo-periostitis; osteo-myelitis; caries; necrosis; sequestra; perforation of the palatine arch; necrosis of the maxillary bone (not from phosphorus or without indication); exostosis (without epithet); osteoma; bony tumor; tumor of the skull; foreign body in the frontal or other sinuses; mastoiditis; abscess of the frontal sinus, maxillary sinus, etc.; osteomalacia; softening of bones; rachitis; scoliosis; lordosis; kyphosis.

This title does not include: Caries of the petrous portion of the temporal bone (53); dental caries (78); osteoscopic pains (24); osteosarcoma (25 G); necrosis due to phosphorus (36).

133. White swellings. *This title includes:* Articular fungosity; coxalgia; scapulalgia.

134 [A. Arthritis.] *This title includes:* Polyarthritis (not of the vertebræ); arthropyosis.

134 [B.] Other diseases of the joints. *This title includes:* Hydrarthrosis; foreign body in joint; arthrodynia; arthrophytosis; ankylosis; arthralgia; arthrocele; genu valgum.

This title does not include: Rheumatismal arthritis (26); arthritis (26).

135. Amputation. *This title includes:* Only cases in which the cause (of the amputation) is not indicated.

This title does not include: Amputation of the breast (115); amputation of the penis (106).

Frequent complications: Septicemia; erysipelas; tetanus; hemorrhage.

136. Other diseases of the organs of locomotion. *This title includes:* Hygroma; perichondritis; disarticulation; tarsalgia; painful clubfoot; retracted digits; Dupuytren's disease; nodular rheumatism; rupture of muscle; muscular diastasis; myodiastasis; rupture of tendon; diseases of tendons; tenophyte; tenosynovitis; tenotomy; tenorrhaphy; torticollis; lumbago.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

In this group we find Pott's disease and other causes of death which are now known to be due to tuberculosis, and which should be properly classified under that title. Amputation is a very questionable term to be included here, since it cannot be certain in any case whether the amputation was performed for injury or disease. Deaths so carelessly returned should be properly placed among ill-defined causes.

Occurrence in Michigan, 1898.—There were only 90 deaths from diseases of the locomotor system in Michigan during the year 1898, corresponding to a death rate of 3.8 per 100,000 estimated population, and showing the insignificance of this class, especially if tuberculous bone disease was placed where it properly belongs. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 53, which also contains a statement of the age and sex distribution. The largest number of deaths occurred under the age of 10 years. By sex there were 54 deaths of males and 36 deaths of females.

Table 53.—Deaths from diseases of the locomotor system in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	90	3.8	7	8	4	11	11	10	10	9	11	4	1	4
I. Upper peninsula	6	2.8	1	—	—	1	—	1	—	1	1	1	—	—
II. Northern counties	8	3.0	1	—	—	1	—	—	2	—	2	1	—	1
III. Central counties	14	3.1	1	2	—	2	3	1	1	2	1	—	—	1
IV. Southern counties	62	4.4	4	6	4	7	8	8	7	6	7	2	1	2
Deaths by sex, 1898.			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
54	36		11	13	7	20	10	13	6	8	15	8	10	—

MALFORMATIONS.

Classification.—The Bertillon classification of causes of death gives the following:

□137. **Malformations.** *This title includes:* Malformation; monstrosity; anomaly; arrested development; hydrocephalus; megalcephalus; hydrorrhachis; spina bifida; anencephalus; encenphalocoele; podencephalus; congenital eventration; omphalocoele; exomphalus; ectopia; imperforate anus, etc.; harelip; anaspadias; hypospadias; cryptorchidism; vascular nevus; polydactylism; syndactylism; clubfoot; talipes varus, valgus or equinus.

This title does not include: Persistent foramen ovale (57); coloboma (53); painful clubfoot (136).

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Occurrence in Michigan, 1898.—There were 140 deaths from malformations in Michigan during the year 1898, corresponding to a death rate of 6.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 54, which also contains a statement of the age and sex distribution. Nearly all of these deaths are those of infants, taking place usually a few days after birth. By sex there were 77 deaths of males and 62 deaths of females.

Table 54.—Deaths from malformations in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	140	6.0	9	12	14	6	6	16	9	12	17	15	11	13
I. Upper peninsula	9	4.3	1	-----	1	1	1	-----	1	-----	1	-----	1	2
II. Northern counties	20	7.5	-----	-----	5	1	-----	1	1	1	3	5	2	1
III. Central counties	33	7.3	2	4	3	1	-----	4	4	1	4	4	2	4
IV. Southern counties	78	5.5	6	8	5	3	5	11	3	10	9	6	6	6
Deaths by sex, 1898.*			Deaths by ages, 1898.											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
77	62		129	136	-----	136	2	1	-----	-----	-----	-----	-----	-----

* 1 with sex not stated.

DISEASES OF INFANCY.

Classification.—The Bertillon classification of causes of death gives the following:

138. Congenital debility, icterus and sclerema. *This title includes:* Premature birth; atrophy (infantile); icterus or hepatitis of the newly-born; atelectasis of the newly-born; edema of the newly-born.

139. Want of care.

140. Other diseases peculiar to infancy. *This title includes:* Umbilical hemorrhage.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

This title, diseases of infancy, is a misnomer and ought properly to have no place in a scientific classification. It is misleading for the reason that a person who examines the statistics might suppose that all diseases of infants were here grouped. This is not at all true, as may be found by examining such titles as tuberculosis, convulsions of infants, infantile diarrhea, etc. As a matter of fact it includes diseases of infants of a somewhat indefinite character, many of which would preferably be compiled under other titles or else relegated to where they truly belong, viz., ill-defined diseases. There seems to be a perpetual tendency in the compilation of the statistics of causes of death to try to produce definite results from entirely indefinite or worthless statements by interpolating the element of age, the fact that a death occurred in an infant being apparently accepted as an explanation of its nature.

Table 55.—Deaths from diseases of infancy in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	1,170	49.8	74	91	99	118	107	66	86	111	119	109	87	103
I. Upper peninsula	188	88.9	14	18	19	15	17	8	20	18	21	10	10	18
II. Northern counties	129	48.1	8	7	13	11	15	7	8	13	14	9	9	15
III. Central counties	166	36.8	10	15	15	17	10	8	15	16	16	17	15	12
IV. Southern counties	687	48.4	42	51	52	75	65	43	43	64	68	73	53	58
Deaths by sex, 1898.*			Deaths by ages, 1898.†											
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.	
651	518	1,144	1,169	1	1,170	-----	-----	-----	-----	-----	-----	-----	-----	

* 1 with sex not stated.

† 1 with age not stated.

Occurrence in Michigan, 1898.—There were 1,170 deaths from diseases of infancy, including congenital debility 747 and premature birth 394, in Michigan during the year 1898, corresponding to a death rate of 49.8 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 55, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 88.9 per 100,000, and the lowest in the central counties, or 36.8 per 100,000. For the State as a whole the month of September had the most deaths and the month of June the fewest. By sex there were 651 deaths of males and 518 deaths of females. Nearly all of the deaths were under one year of age, with the single exception of a return of "infantile," inadvertently compiled as such, for a child aged 5 years. Also in the primary table (Table III, p. 34) a blunder was made and observed too late for correction at that place whereby a death from "want of care" of a person aged 80 years and over was included under that title among disease of infancy. As corrected in Table 20, this makes senile debility 658 instead of 657.

DISEASES OF OLD AGE.

Classification.—The Bertillon classification of causes of death gives the following:

141. Senile debility. *This title includes:* Senility; old age; cachexia (of the aged); senile exhaustion; senile dementia.

This title does not include: Senile gangrene (126).

Table 56.—Deaths from old age in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	658	28.0	72	61	53	71	56	56	45	43	46	52	50	53
I. Upper peninsula	29	13.7	3	.....	1	6	3	2	3	1	2	4	.....	4
II. Northern counties	85	31.7	6	8	7	11	7	6	6*	4	7	6	10	7
III. Central counties	113	25.0	13	6	11	9	8	12	8	9	6	11	8	12
IV. Southern counties	431	30.4	50	47	34	45	38	26	28	29	31	31	32	30
Deaths by sex, 1898.			Deaths by ages, 1898.†											
Males.	Females.		Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
326	332		.....	.....	.....	.....	.....	.....	.....	.....	1	25	171	460

† 1 age not stated.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the

statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

The same remarks that were made under the preceding title in regard to the fallacy of making an age period part of the classification of causes of death applies with even greater force to the heading "Senile debility" or old age. This conveys no information whatever, more than would be obtained by a compilation under the head "Unknown," with statement of the ages of decedents. Furthermore it is misleading because it does not include all of the deaths of old persons but only the ones indefinitely reported. To obtain a correct view of the deaths from old age, all deaths of aged persons must be studied and not the few only to which the carelessness or ignorance of physicians has failed to assign a definite cause of death. It would be better that this title should be entirely omitted and that deaths so compiled be placed under ill-defined causes.

Occurrence in Michigan, 1898.—There were 658 deaths from old age in Michigan during the year 1898, corresponding to a death rate of 28.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 56, which also contains a statement of the age and sex distribution. By sex there were 326 deaths of males and 332 deaths of females.

SUICIDE.

Classification.—The Bertillon classification of causes of death gives the following:

142 A. Suicide by poison. *This title includes:* Voluntary poisoning.

This title does not include: Morphinism (37); cocaineism (37); willful taking of sulphuric acid or any other corrosive acid (142 I).

142 B. Suicide by asphyxia. *This title includes:* Suicide by vapor of charcoal.

142 C. Suicide by strangulation. *This title includes:* Hanging.

142 D. Suicide by drowning.

142 E. Suicide by firearms.

142 F. Suicide by cutting instruments.

142 G. Suicide by precipitation from a height.

142 H. Suicide by crushing.

142 I. Other suicides. *This title includes:* Willful taking of sulphuric acid or of any other very corrosive substance.

Note.—Among suicides should be classed only cases which are definitely stated as such, or which result from suicidal attempts.

External or internal lesions caused by sulphuric acid or other corrosive substances are not classed under *poisoning* but under *burns*.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

A peculiarity of the Bertillon classification is the very extensive list of methods of suicide and the extremely inadequate provision for accidental deaths, with the entire omission of deaths from homicide. This arises from the fact that the number of suicides in Paris is larger than any other class of violent deaths, and as the reverse obtains in most vital statistics, including those of Michigan, it would seem desirable that a more logical arrangement should be adopted. This has been done to some extent as a provisional measure in the tables in this report, as on page 60.

Occurrence in Michigan, 1898.—There were 189 deaths from suicides in Michigan during the year 1898, corresponding to a death rate of 8.0 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 57, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the southern counties, namely 8.8 per 100,000, and the lowest in the Upper Peninsula, or 5.2 per 100,000. For the State as a whole the month of June had the most deaths and the month of November the fewest. The largest number of deaths occurred between the ages of 40 and 49 years. By sex there were 141 deaths of males and 48 deaths of females.

Table 57.—Deaths from suicide in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	189	8.0	19	13	12	19	23	24	15	17	15	16	4	12
I. Upper peninsula	11	5.2	3	-----	1	-----	1	1	-----	1	-----	2	-----	2
II. Northern counties	16	6.0	-----	1	-----	4	2	1	2	2	1	1	-----	2
III. Central counties	37	8.2	4	-----	4	2	7	7	3	-----	6	2	-----	2
IV. Southern counties	125	8.8	12	12	7	13	13	15	10	14	8	11	4	6

Deaths by sex, 1898.		Deaths by ages, 1898.*											
Males.	Females.	Under 1 year.	Under 5 ye. rs.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
141	48	1	1	-----	1	8	20	26	52	39	25	12	4

* 2 with age not stated.

The means of death employed by suicides are shown in detail in Table III, p. 34, according to which it appears that 38 males and 19 females took poisons of various kinds; 37 males and 12 females hung themselves; 11 males and 6 females committed suicide by drowning; 33 males and 3 females shot themselves; 15 males and 6 females used cutting instruments, chiefly razors; 1 female leaped from a height and 7 males and 1 female died from other or unspecified means. This statement is subject to a correction, namely, that the death of the female under one year of age should not have been compiled under the heading suicide but under homicide. The case was that of a mother who killed her child before committing suicide, and both deaths were returned as "suicide," and inadvertently compiled as such.

ACCIDENTS.

Classification.—The Bertillon classification of causes of death gives the following:

143. Fractures.**144. Dislocations.** *This title includes:* Luxation; subluxation.

145. Accidental injury. *This title includes:* Contusion; bite (not venomous or virulent); crushing; railroad accident (suicides excepted); injury by cutting instrument (without evidence of suicide); accidental fall; concussion of the brain; perforation of the skull; traumatic hemorrhage; traumatic fever; traumatic eventration; perforation of the abdomen or chest; every acute affection qualified as "traumatic"; wounds by firearms.

146 A. Burning by fire. *This title does not include:* Conflagration.

146 B. Burning by corrosive substances. *This title includes:* Burning by vitriol; accidental taking of sulphuric acid.

147. Sunstroke and freezing.

This title does not include: Cold (newly-born) (139).

148. Accidental drowning. *This title includes:* Drowning without evidence of suicide.

149. Inanition. *This title includes:* Hunger; insufficient food (not including newly-born); want.

This title does not include: Want of care (newly-born) (139); insufficient nourishment (newly-born) (139); sitiophobia (46); hysteric anorexia (52 A).

150. Inhalation of noxious gases (not suicidal). *This title includes:* Accidental asphyxia (excluding pathological asphyxia and suicidal asphyxia); asphyxia by illuminating gas; asphyxia by stove (fixed or movable); oxide of carbon; conflagration; ammonium sulphhydrate; night-soil collectors' lead fumes; chloroform; nitrogen protoxide.

This title does not include: Asphyxia (without other indication) (156).

151. Other accidental poisoning. *This title includes:* Poisoning—criminal, accidental or by cause unknown; antimonial cholera; acute ergotism; absorption of venom; snake-bite.

This title does not include: Accidental taking of sulphuric acid or other corrosive substances (146 B); chronic lead poisoning (35); mercurial poisoning (36 or 37, as the case requires); morphinism, chronic ergotism, etc. (37).

152. Other external violence. *This title includes:* Accident (without other explanation); murder; homicide; assassination (without other explanation); ill-treatment (of an infant); execution; lightning; electricity; foreign body in the larynx; foreign body in the trachea.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Remarks made under the preceding head in regard to the classification of deaths from accidents and suicides may be referred to, and also the practical classification of deaths from accidental causes, as shown on page 60 of this report. The changes adopted for our purposes consist of an amplification of No. 145, Accidental injury, so that it may include some of the more important forms or methods of injury. The Bertillon classification is entirely at fault in the treatment of this class of returns, as the principle of classification, viz., the method of injury, is largely disregarded or made subordinate to the nature of the injury. It is of very much more importance for practical purposes to know whether a death occurred from gunshot or railroad accident rather than from a fracture of the skull, which might be present in both cases. This fact is fully recognized in the English classification and should induce an entire revision of this part of the Bertillon classification. It was found necessary also to divide No. 152, Other external violence, so that that portion

of it due to accidental causes might be retained under this head, while deaths from homicide would come under the next division. By an accident of compilation one death of a child was included under this head which should have been properly included under homicide. It was that of a child killed by its mother who at the same time committed suicide, and as the return by the coroner's jury was suicide both deaths were inadvertently compiled under that title. This explains an apparent discrepancy in the tables.

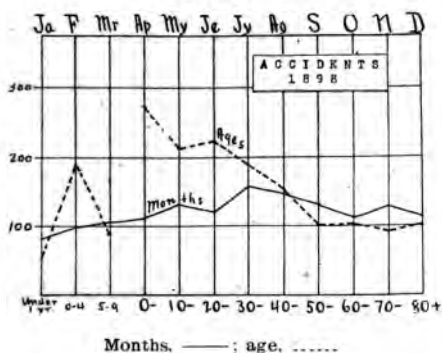
Occurrence in Michigan, 1898.—There were 1,455 deaths from accidents and external causes in Michigan during the year 1898, corresponding to a death rate of 61.9 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 58, which also contains a statement of the age and sex distribution.

By geographical sections the highest rate of mortality from this cause occurred in the Upper Peninsula, namely 109.7 per 100,000, and the lowest in the southern counties, or 54.6 per 100,000. For the State as a whole the month of July had the most deaths and the month of January the fewest. The largest number of deaths occurred under the age of 10 years. By sex there were 1,152 deaths of males and 303 deaths of females.

Table 58.—Deaths from accidents in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	1,455	61.9	82	97	108	112	135	121	158	148	134	113	130	117
I. Upper peninsula	232	109.7	11	19	17	14	21	16	22	17	30	26	22	17
II. Northern counties	199	74.2	9	11	14	21	18	19	22	20	20	16	14	15
III. Central counties	249	55.2	9	18	29	17	31	18	20	20	31	17	17	22
IV. Southern counties	775	54.6	53	49	48	60	65	63	94	91	53	54	77	63

DIAGRAM XVIII.



Deaths by ages, 1898.

Ages.	Number.	Ages.	Number.
Under 1 year.....	51	50 to 59 years....	101
Under 5 years....	184	60 to 69 years....	101
5 to 9 years.....	89	70 to 79 years....	91
Under 10 years..	273	80 years and over	102
10 to 19 years....	212	Deaths by sex, 1898.	
20 to 29 years....	224		
30 to 39 years....	189	Males.....	1,152
40 to 49 years....	155	Females.....	303

Diagram XVIII, in connection with the table, illustrates the monthly distribution and age incidence of deaths from this cause. In this diagram only the number of deaths is considered, as stated in the table, and not the death rates. As the population of each age period is less than that of the preceding, it is evident that a smaller number of deaths at a more advanced age may actually correspond to a higher death rate in proportion to the population of that age than a larger number of deaths in earlier life when the number of persons of younger ages is greater. Hence for exact comparisons reference should be made to Table 21 and Diagram VI, pp. lxxxvi and lxxxvii, where the death rates are presented for the decennial age periods.

The largest individual cause of accidental deaths in Michigan was drowning, which was responsible for 250 deaths as shown in Table III, p. 36. Fractures (mode of injury not stated) caused 152 deaths and dislocations 16. There were 79 deaths from gunshot wounds, 60 from accidents in mines, 158 from accidents and injuries on railroads, 90 from vehicles and horses, 102 from burns, 17 from scalds and 3 from corrosive liquids, 7 from noxious gases and 75 from poisoning. Elemental agencies killed 40 persons, namely 11 by lightning, 18 by sunstroke and 11 by freezing. Other modes of injury and deaths from accident of unspecified character amounted to 406.

HOMICIDE.

Table 59.—Deaths from homicide in Michigan, 1898.

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	33	1.4	2	2	3	.....	1	3	2	3	4	6	1	6
I. Upper peninsula	3	1.4	1	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1
II. Northern counties	5	1.9	1	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
III. Central counties	6	1.3	.....	.....	.....	.....	.....	2	2	.....	.....	1	.....	1
IV. Southern counties	19	1.3	.....	1	2	.....	1	1	.....	3	4	5	1	1

Deaths by sex, 1898.		Deaths by ages, 1898.*											
Males	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.
21	12	4	5	.....	5	5	7	8	3	3	.....	1	.....

* 1 with age not stated.

Classification.—The Bertillon classification of causes of death does not give a separate title to deaths of this class, but includes them under 152, Other external violence. For the reasons given under the preceding title, a separate division is made in this report, and this head includes all deaths caused by injuries received at the hands of other persons. It

is possible in some cases that the nature of the injury may be specified without giving the fact that the death was caused by the action of another person, in which case the compilation would be made under deaths from accident.

Occurrence in Michigan, 1898.—There were 33 deaths from homicide in Michigan during the year 1898, corresponding to a death rate of 1.4 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 59, which also contains a statement of the age and sex distribution. By sex there were 21 deaths of males and 12 deaths of females.

CAUSES ILL-DEFINED.

Classification.—The Bertillon classification of causes of death gives the following:

153. Exhaustion and cachexia. *This title includes:* Debility (adults); asthenia; adynamia; ataxo-adynamia; asthenic, hectic, colliquative or synochal fever.

This title does not include: Congenital debility (139); exhaustion, cachexia or debility of the aged (141); ataxo-adynamic fever (1).

154. Inflammatory fever. *This title includes:* Algid fever; carphologia; fever of dentition; autumnal, gastric, bilious, or catarrhal fever.

This title does not include: Continued fever (1); hay fever (76).

155. Dropsy. *This title includes:* Anasarca; ascites; edema of the extremities and general edema; organic disease (not defined).

This title does not include: Edema of the newly-born (139); edema of the glottis (68); edema of the lungs (77 B); edema of the brain (42).

156. Asphyxia, cyanosis. *This title includes:* Dyspnea.

This title does not include: Asphyxia from external cause (suicide, 142 B); asphyxia from inhalation of noxious gases (150); cyanosis from persistent foramen ovale or malformation of the great vessels (57).

157. Sudden death. *This title includes:* Syncope (preceding death).

This title does not include: Sudden death during puerperium (123), unless the "sudden death" is unaccompanied by an explanatory remark, *e. g.*, "sudden death due to diabetes" (24), or "sudden death from apoplexy" (42), etc.

158. Abdominal tumor. *This title includes:* Intestinal tumor; laparotomy.

This title does not include: Tumor of the stomach (25 B); tumor of the uterus (111); hydatid tumor (89); ovarian cyst (113).

159. Other tumors. *This title includes:* All tumors (except cancer and its synonyms) of which the location is not indicated by the physician; vascular tumor; cystotomy; lipoma; wen; sebaceous tumor.

This title does not include: Fecal tumor (86).

160. "Plate." *This title includes:* Surgical shock.

161. Unknown diseases. *This title includes:* All of the returns of causes of death of too vague a character to permit them to be classed under any of the preceding titles: Coma; collapse; cough; delirium; suppuration; transfusion of blood; trepanning; tympanites; abdominal tympanites; polydipsia; polyuria; pollakiuria, etc., etc.

The reference numbers refer to the complete classification as printed in the Appendix of this report, and also as practically applied to the statistics of Michigan for the year 1898 in Table III, p. 20, Table IV, p. 40, and Table VII (cities) p. 78.

Under ill-defined causes a very miscellaneous list of returns may be found, which shows to great advantage the ingenuity of some physicians in making statements without thereby conveying any information. One of the most common forms of indefinite return is debility or exhaustion without specifying the nature of the disease which caused the debility. Another extremely faulty return is heart failure, which we have placed

as a separate title in the Michigan report in connection with dropsy, another indefinite return of some importance. It may be that both of these titles in some cases refer to the results of organic heart disease. The number of deaths compiled under these ill-defined causes is somewhat greater than it might have been from the fact that when an indefinite return such as dropsy, debility or heart failure was associated with "old age" as a cause of death the statement was classified under one of the ill-defined causes and not under senile debility (141) because it was considered that the return of old age as a cause of death conveyed absolutely no information whatever in addition to that given by the age of the decedent.

Occurrence in Michigan, 1898.—There were 1,347 deaths from ill-defined and unspecified causes in Michigan during the year 1898, corresponding to a death rate of 57.3 per 100,000 estimated population. The distribution of these deaths by months is given for the State and for the four geographical sections in Table 60, which also contains a statement of the age and sex distribution.

Table 60.—*Deaths from ill-defined causes in Michigan, 1898.*

Geographical sections.	Total deaths, 1898.	Death rate per 100,000 pop.	Deaths by months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
State	1,347	57.3	109	115	134	126	94	101	86	103	108	129	124	118
I. Upper peninsula	121	57.2	9	8	12	12	12	9	7	10	10	8	11	13
II. Northern counties	220	82.0	19	18	29	21	11	13	12	22	23	22	15	15
III. Central counties	263	58.3	28	22	23	28	16	28	13	15	21	21	22	26
V. Southern counties	743	52.4	53	67	70	65	55	51	54	56	54	78	76	64

Deaths by sex, 1898.*		Deaths by ages, 1898.†												
Males.	Females.	Under 1 year.	Under 5 years.	5 to 9.	Under 10 years.	10 to 19.	20 to 29.	30 to 39.	40 to 49.	50 to 59.	60 to 69.	70 to 79.	80 and over.	*
671	675	302	322	10	332	21	30	48	52	102	135	297	326	

* 1 with sex not stated.

† 4 with age not stated.

The great superiority of the returns of causes of death by means of the original certificates of death signed by physicians, as made for the first time in Michigan for this report, may be seen when it is stated that in 1896, out of only 21,983 deaths returned for the year, in no less than 1,820 the causes of death were entirely unknown or unspecified, besides a list of over 1,400 deaths which would be compiled among the ill-defined causes in the above table.

PART III.—MARRIAGES IN MICHIGAN DURING THE YEAR 1898.

There were 20,138 marriages returned to the State Department as having occurred in Michigan during the year 1898. This number corresponds to a marriage rate of 16.9 persons married per 1,000 population. There was an increase of 1,559 marriages over the number recorded for the preceding year. As shown in Table 3, p. xxviii, the marriage rate was higher than for four years past, but it has not yet reached the average height prevailing before the hard times. An increase may be expected for some years to come until normal conditions are reached.

It may be well to throw out a word of caution at this point in regard to the comparison of the rates for 1898 and previous years with the marriage rates for the State which will be presented in the following reports. During the season of 1899 an enterprising clerk of one of the counties of Michigan situated on the southeastern shore of Lake Michigan went into the wholesale issuance of marriage licenses to non-residents, finding a market chiefly among the residents of Chicago, and interior points of Indiana and Illinois, who came to St. Joseph in immense Sunday excursions. Formerly a large "quick marriage" business was done at Milwaukee, but the comparatively recent enactment of laws for the proper regulation of marriages by the Wisconsin Legislature put a sudden stop to the "industry,"—as conducted, with "runners," and alleged "ministers of the gospel" especially retained for the purpose, it became only an industry pure and simple, and not the celebration of the most sacred contract into which persons can enter. As a result hundreds of marriages of non-residents have been added to the Michigan statistics, and it will probably be necessary to exclude Berrien county from the final compilation in order to make a comparison of the marriage rates of 1899 and 1900 (and of following years, unless the Legislature should take prompt action to prevent what is being recognized abroad as a shame and disgrace to the State), with those of previous years of registration. The subject will be considered more fully in the report for 1899, and is mentioned here chiefly for the purpose of stating that the notorious "St. Joseph marriages" had not become a "fad" in 1898 to the degree of materially affecting the statistics contained in this report.

LICENSES NOT RETURNED—DESIRABLE LEGISLATION.

The law provides that clergymen or justices of the peace solemnizing marriages shall make their returns to the county clerk within ten days thereafter. In spite of the efforts of this Department and of some county clerks, there are still too many cases of neglect of this provision of the law. Its enforcement is somewhat difficult from the fact that there is no way of ascertaining what justice of the peace or clergyman performed the ceremony until the return is made, hence the clerk cannot know whom

to address in a case of delinquency. It would be a good plan for the clerk to ask the applicant for every marriage license who is to perform the ceremony, and indorse the same on the affidavit; then, if a return was not duly received, a letter should be sent to the person who performed the ceremony asking for the return. In this way many delinquent returns would be received.

If, however, a clergyman or justice neglects or delays to make his reports as required by law, evidence of that fact should be secured and laid before the prosecuting attorney. There can be no reasonable explanation or excuse for a justice of the peace, who is supposed to be familiar with the law and who has accepted a fee from a couple for the purpose of performing a marriage ceremony, if he should fail to furnish the only legal evidence of that ceremony for the county and State records. Clergymen should be fully familiar with their duties in this respect, and no hesitation should be felt in promptly prosecuting them for neglect, especially if persisted in after notice. By careful attention to this matter and a little promptness and energy in seeking for missing returns, the accuracy of the registration of marriages can be considerably improved.

In this connection it would perhaps be desirable if marriage licenses should have a time-limit, instead of being entirely indefinite in this respect as at present. This would enable the matter of delinquent returns to be more sharply checked up. There are hundreds of licenses now valid in Michigan on which no return has been made to the county clerk, and concerning which it is impossible to say whether any marriage has been performed and if so in what year. Thus a license may have been issued in 1887 and for some reason the marriage did not occur. The same license would be sufficient for the marriage of the parties during the current year. The record of the license appeared in the county clerk's transcript of 1887, and has been carried as an open license since that date. As a rule returns are not received after the lapse of a year, but sometimes returns of marriages on old licenses are received and it cannot be certain in any case whether the marriage was not performed soon after the issue of the license and the return failed to be made as required by law.

Some of the changes which might perhaps be made with advantage relative to the issuance of licenses are as follows: (1) Provision for a list of persons authorized to perform marriages in each county, which could be transmitted to the Secretary of State and a list for the entire State, showing addresses, etc., be published for the use of county clerks. (2) Requirement of the statement of the name and address of the person who is to perform the ceremony as a part of the affidavit. (3) Giving the Secretary of State authority, and making it a part of his duty, to assist in the thorough execution of the law in the same way that he is charged with the duty of seeing the law for the registration of deaths thoroughly executed. (4) Making provision for the publication of marriage licenses at a certain date prior to the date of marriage. This would largely cut off the inundation of the State by couples from Chicago seeking marriage of the St. Joseph type, and if it be desired to rescue the State from the opprobrium which has been thus brought her, will commend itself for adoption. If marriages are published by law, then all should be pub-

lished, instead of permitting a class of "suppressed marriages" to exist as at present. (5) Marriage licenses should be returnable as at present within ten days after the ceremony, and it should be made mandatory upon the county clerk and Secretary of State to prosecute for neglect. A few fines collected from delinquents would do more than twenty years of exhortation have done. (6) A marriage license should be good only during the year of issue. If dated in 1898, then the marriage should be performed only during that year. Special provision could be made for dating licenses issued during the last days of a year for use in the following year. (7) The fees to which clerks are entitled for the issue of marriage licenses should be sharply defined and a penalty imposed for exceeding the same. The law contemplates the payment of fifty cents for this purpose, with a possible fee of twenty-five cents for the affidavit presented when executed by the clerk. Usually from one to two dollars is collected from the applicant, the money going directly to the clerk for his services.

MARRIAGES AND MARRIAGE RATES BY COUNTIES, 1898.

A statement of the number of marriages performed in each county during each month of the year 1898, may be found in Table I, p. 105, and in Table 9, p. xliii, the marriage rates are given for the individual counties. The computation of satisfactory rates is in some cases difficult for the smaller counties owing to the relatively large changes in population since the last census, but in most instances these rates may be accepted as a fairly satisfactory basis of comparison, always bearing in mind the possible differences due to age constitution of the population. The older-settled counties of the southern part of the State show higher rates as a rule than the northern counties, contrary to the prevalence of birth rates. For an exact analysis a set of rates based upon the number of unmarried persons of marriageable age would be desirable, but the difficulty of making a satisfactory estimate for the intercensal year 1898, renders it desirable to postpone further investigation of this subject until the publication of the results of the United States census of 1900.

SUMMARY OF THE REGISTRATION OF MARRIAGES IN MICHIGAN, 1898.

Some of the most important facts relative to the registration of marriages in Michigan during the year 1898 are herewith presented:

Total number of marriages returned, 1898.....	20,138
Marriage rate per 1,000 estimated population, 1898.....	16.9

The above statement does not include 50 marriages performed by Judges of Probate under the act authorizing secret marriages in certain cases. Twenty-four of these secret marriages were at illegal ages according to the general laws of the State and others gave legal sanction to common-law unions, the couples being supposed to have been regularly married by the communities in which they live. A table showing the age distribution of these marriages may be found on page 115.

As compared with the preceding year of registration, we have:

Increase of marriages registered for the year 1898 (20,138) over the number for 1897 (18,579)....1,559

cxlviii VITAL STATISTICS OF MICHIGAN, 1898.

As to the occurrence of marriages by months, we have:

More than average number.....	June, September, October, November, December
Less than average number.....	January, February, March, April, May, July, August
Favorite month for marriages, 1898.....	November, 2,264 marriages or 22.7 per 1,000
Month of fewest marriages, 1898.....	July, 1,315 marriages or 14.7 per 1,000

Of the 20,138 marriages, there were with respect to nativity:

Both bridegroom and bride of native birth.....	12,935 or 64.2 per cent
Both bridegroom and bride of foreign birth.....	2,696 or 13.3 per cent

Including mixed marriages, that is, marriages in which bridegroom and bride were of different nativities, there were:

Males of native birth married, 1898.....	14,887 or 73.9 per cent
Males of foreign birth married, 1898.....	5,236 or 26.0 per cent
Females of native birth married, 1898.....	15,406 or 76.5 per cent
Females of foreign birth married, 1898.....	4,299 or 21.3 per cent

As to age at marriage, the most important groups were:

Males aged 20 to 24 years, both inclusive.....	7,676 or 38.1 per cent
Males aged 25 to 29 years, both inclusive.....	6,171 or 30.6 per cent
Females under 20 years of age.....	5,641 or 28.0 per cent
Females aged 20 to 24 years, both inclusive.....	8,444 or 41.9 per cent

MARRIAGES RETURNED BY MONTHS, 1889-98.

The returns of marriages by months for the ten years 1889-98 may be examined in Table 61, and compared with the average of the ten-year period there shown. During the ten years, the largest number of marriages occurred in November six times, including the last three years 1896-98. In three years of the period October was the favorite month and in one year December. The fewest marriages occur, as a rule, in February, as in 1898, but January, March and August are also comparatively seldom chosen.

Table 61.—Marriages returned, by months, for the years 1889-98; with average for the ten-year period.

Years.	Total marriages.	Months of marriage.												
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
1889.....	18,317	1,439	1,331	1,415	1,398	1,459	1,404	1,382	1,256	1,652	1,908	1,892	1,778	3
1890.....	18,064	1,315	1,252	1,249	1,614	1,356	1,482	1,438	1,314	1,739	1,854	2,057	1,994	2
1891.....	19,244	1,466	1,326	1,339	1,623	1,419	1,502	1,380	1,383	1,749	1,986	1,984	2,086	1
1892.....	20,107	1,335	1,455	1,542	1,543	1,590	1,751	1,386	1,407	1,286	2,037	2,181	2,049	5
1893.....	19,197	1,452	1,273	1,318	1,663	1,574	1,769	1,408	1,356	1,730	2,018	2,060	1,574	2
1894.....	18,320	1,366	1,060	1,403	1,552	1,348	1,486	1,262	1,256	1,704	2,034	1,992	1,754	3
1895.....	18,952	1,389	1,342	1,324	1,536	1,456	1,690	1,367	1,349	1,658	2,110	2,036	1,694	1
1896.....	18,897	1,443	1,271	1,368	1,684	1,361	1,762	1,305	1,238	1,759	1,826	2,028	1,846	6
1897.....	18,579	1,179	1,273	1,426	1,441	1,354	1,828	1,235	1,258	1,719	1,887	2,044	1,935	.....
1898.....	20,138	1,397	1,302	1,400	1,613	1,482	2,056	1,315	1,487	1,793	2,043	2,264	1,979	7
Average 1889-98.	19,032	1,378	1,289	1,378	1,567	1,440	1,673	1,348	1,330	1,733	1,970	2,054	1,869	3

Maxima in bold face type; minima in italics.

MARRIAGES BY MONTHS AND QUARTERS, 1898.

In Table 61 the marriages in each month of the year cannot be compared with the utmost accuracy on account of the varying lengths of the calendar months. Also the average of the ten years is closely comparable only with the years near the middle of the period, as the increase of population is naturally accompanied by an increased number of marriages under normal conditions. Table 62 is intended to obviate these difficulties and permit of direct comparisons between the individual months of the registration year 1898 and also between these months and the months of the ten-year period. For this purpose three alternative statements are presented for the year 1898, namely, (1) average number of marriages per day; (2) rank in a percentile scale based on the mean daily number; and (3) monthly marriage rate. The second of these methods of statement is perhaps the most convenient as showing the relative prevalence of marriages in the several months. As the numbers constituting the ten-year average, 1889-98, have been multiplied by the ratio between the estimated population for the year 1898 and the mean estimated population for the decennial period, the ratios given for the year may be compared directly with the ratios stated for the period 1889-98, thus showing the tendency to change.

Table 62.—Marriages in Michigan, by months and quarters, 1898.

Year and months.	Number of marriages, 1898.		Average number per day, 1898.	Rank.	Marriage rate per 1,000 population, 1898.	Ten-year period, 1889-98.		
	By months.	By quarters.				Average number.*	Average daily number.*	Rank.
Year.....	20,138	20,138	55.2	1,200	16.9	20,457	56.0	1,200
January.....	1,397	4,099	45.1	82	13.8	1,481	47.8	85
February.....	1,302		46.5	84	14.2	1,385	49.1	88
March.....	1,400		45.2	82	13.8	1,481	47.8	85
April.....	1,613	5,151	53.8	97	16.2	1,684	56.1	100
May.....	1,482		47.8	87	14.6	1,548	49.9	89
June.....	2,056		68.5	124	20.7	1,798	59.9	107
July.....	1,315	4,595	42.4	77	13.0	1,449	46.7	83
August.....	1,487		48.0	87	14.7	1,430	46.1	82
September.....	1,793		59.8	108	18.0	1,863	62.1	111
October.....	2,043	6,286	65.9	119	20.2	2,118	68.3	122
November.....	2,264		75.5	137	22.7	2,208	73.6	131
December.....	1,979		63.9	116	19.5	2,009	64.8	116
Unknown.....	7	7	-----	-----	-----	3	-----	-----
Average.....	1,678	5,035	55.2	100	16.9	1,705	56.0	100

* Numbers given in Table 61 multiplied by 1.0749, the ratio between the population of Michigan in 1898 and the average estimated population of the period 1889-98. The monthly and daily numbers are, therefore, directly comparable for the year and ten-year period.

We note in Table 62 that the favorite month for marriage in 1898 was November, which ranked 137 per cent of the normal. This concentration in November is a marked increase on the percentage for the ten-year period, although November was the most popular month on the whole, with October second in favor. For the year 1898, October has ceased to be the second month in respect to the number of marriages, having been

passed by June, which has been rapidly increasing in popularity during recent years. October is third in the scale for the year and December fourth. The month of fewest daily marriages in 1898 was July, while August stood lowest for the ten-year period.

NATIVITY OF PERSONS MARRIED IN MICHIGAN, 1898.

A statement of marriages according to the nativity of the persons married can be found, by counties, in Table III, p. 112, which also gives the total number of persons married of each nativity. The aggregate for the State is summarized in Table 63, according to which there were 12,935 marriages in Michigan during the year in which both the bridegroom and the bride were of native birth, 2,686 in which both were foreign born, besides various combinations of the nativities and of un-stated nativity. The larger proportion of the latter among the brides, which is a usual feature of these statistics, probably arises from the fact that the bridegroom frequently fills out the affidavit for license to marry in the absence of the bride, the latter not appearing before the county clerk. Hence personal particulars relative to the bride are more apt to be omitted.

Owing to the somewhat larger number of marriages between foreign born males and native females than between the converse group, the total number of native males married (14,887 or 73.9 per cent) is somewhat less than the number of native females married (15,406 or 76.5 per cent).

Table 64 compares the per cents of marriages of each nativity and combinations of nativity for the year 1898 with those for the immediately preceding years of registration and with five-year periods from an early period of registration. The percentage of native couples for 1898 is the largest recorded, there having been a progressive increase in the proportion of native marriages and a decrease in the proportion of foreign born persons married for some years past. This may be due to the lessening of the amount of immigration into the State of recent years, and also to the financial distress of some years past, which has seemed to have a more pronounced effect in restricting the marriages of the foreign born element of the population than of the native born.

Table 63.—*By nativity, the number and per cent of brides and bridegrooms returned for the year 1898.*

Bridegrooms and brides,— nativity specified.		Brides, 1898.			Bridegrooms, 1898.	
		Native born.	Foreign born.	Unknown.	Total of each nativity.	Per cent of each nativity
Bridegrooms..	{ Native born.....	12,935	1,608	344	14,887	73.9
	{ Foreign born.....	2,463	2,686	87	5,236	26.0
	{ Unknown.....	8	5	2	15	0.1
Brides.....	{ Total of each nativity.....	15,406	4,299	433	20,138	-----
	{ Per cent of each nativity..	76.5	21.3	2.2	-----	100.0

Table 64.—*Nativity of marriages in Michigan for the years 1895-98; compared with averages for five successive quinquennial periods, 1871-95.*

Years and periods averaged.	Nativity of marriages,—Per cent of total.				
	Both native born.	Both foreign born.	Foreign groom and native bride.	Native groom and foreign bride.	One or both unknown.
Average, 1871-75.....	59.7	18.5	12.3	7.0	2.6
Average, 1876-80.....	63.2	14.0	13.3	7.4	2.2
Average, 1881-85.....	58.2	19.4	12.4	8.7	1.3
Average, 1886-90.....	56.4	20.3	13.2	8.1	2.0
Average, 1891-95.....	58.0	18.2	13.2	7.9	2.6
Year 1895.....	60.5	15.7	13.2	8.1	2.5
Year 1896.....	61.1	16.2	12.5	8.0	2.3
Year 1897.....	63.3	13.6	12.3	8.1	2.7
Year 1898.....	64.2	13.3	12.2	8.0	2.2

AGES OF PERSONS MARRIED IN MICHIGAN, 1898.

Table II, p. 107, shows the number of persons married, by five-year periods of age, in each county of the State, while Table IV, p. 114, shows the various combinations of males and females who married by five-year periods during the year. In the latter table, we note that the largest number of marriages of any combination of age groups occurred between males aged from 20 to 24 years, both inclusive, and females of the same age period. This number, 3,911, represents 19.4 per cent of the total number of marriages performed for the year. The next combination in point of number was that of males aged from 20 to 24 years with females under 20 years of age; then came males aged from 25 to 29 years with females aged 20 to 24, and, at a much greater interval, males aged 25 to 29 years with females under 20 years of age. The males of the latter period, 25 to 29 years, married females of their own age group nearly as often as they did those under 20 years, the numbers being 1,467 and 1,428, respectively. No other combination of ages besides the five above stated reached the thousand mark for the year.

Table IV, p. 114, also shows the number of persons of each sex who married during the year at each five-year period of age, and in connection with these columns are given the per cents of each group to the total number of marriages. These ratios are also shown in Tables 65 (males) and 66 (females) in connection with the results of previous years of registration, the earlier of which are grouped for convenience in five-year periods. It would appear from these tables that the per cent of males married under 20 years of age was the lowest on record, having been steadily decreasing since the beginning of registration. The percentage of males aged 20 to 24 years is also lower than that for earlier years, although a slight increase is shown for 1898 as compared with 1897. Males aged 25 to 29 years do not show very much change throughout the period covered, but above this age a general

increase is indicated in the ratios of marriages. Among females, the proportion of marriages under 20 years of age has largely declined since the early years of registration and the year 1898 stands as the lowest on record, thus showing the continuation of the movement. As compared with the earlier years of registration the period 20 to 24 shows an increase, 1898 being a maximum. An increase is shown generally for the older ages.

Table 65.—*Percentage of males married in Michigan at specified periods of age for the years 1895-98; compared with averages for five quinquennial periods, 1871-95.*

Years and periods averaged.	Ages of males married, 1871-98.														Unk.
	Under 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	
Average, 1871-75...	2.6	41.2	29.5	10.6	5.5	3.3	2.3	1.7	1.0	0.8	0.5	0.3	0.1	----	0.6
Average, 1876-80...	2.6	40.8	29.8	10.8	5.6	3.2	2.2	1.6	1.1	0.8	0.5	0.3	0.1	----	0.5
Average, 1881-85...	2.3	39.5	30.7	11.4	5.7	3.2	2.2	1.6	1.0	0.9	0.5	0.3	0.1	----	0.4
Average, 1886-90...	2.1	37.7	32.4	12.2	5.7	3.0	2.4	1.5	1.1	0.8	0.6	0.3	0.1	----	0.1
Average, 1891-95...	1.9	38.1	30.8	12.7	6.0	3.2	2.3	1.7	1.2	0.9	0.7	0.3	0.1	----	-----
Year 1895.....	1.9	37.2	31.2	12.9	6.2	3.0	2.3	1.9	1.2	0.9	0.7	0.3	0.1	----	-----
Year 1896.....	1.8	37.2	31.1	12.1	6.6	3.3	2.7	1.8	1.3	0.9	0.8	0.3	0.2	0.1	-----
Year 1897.....	1.9	37.6	30.8	12.1	6.7	3.7	2.2	1.8	1.2	0.9	0.6	0.4	0.2	-----	-----
Year 1898.....	1.7	38.1	30.6	12.3	6.6	3.3	2.5	1.7	1.1	0.9	0.6	0.3	0.2	0.1	-----

Table 66.—*Percentage of females married in Michigan at specified periods of age for the years 1895-98; compared with averages for five quinquennial periods, 1871-95.*

Years and periods averaged.	Ages of females married, 1871-98.														Unk.
	Under 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	
Average, 1871-75...	36.9	36.5	12.7	5.0	3.0	2.0	1.3	0.8	0.5	0.3	0.2	----	----	----	0.9
Average, 1876-80...	37.4	37.4	11.7	4.7	3.1	1.9	1.3	0.8	0.5	0.3	0.2	----	----	----	0.7
Average, 1881-85...	33.8	38.7	13.7	4.9	3.1	1.9	1.3	0.8	0.5	0.3	0.2	0.1	----	----	0.6
Average, 1886-90...	32.8	39.5	14.2	5.2	2.9	1.9	1.3	0.9	0.6	0.4	0.2	0.1	----	----	0.2
Average, 1891-95...	30.8	40.6	14.3	5.3	3.1	2.0	1.4	1.0	0.6	0.5	0.2	0.1	----	----	-----
Year 1895.....	30.2	40.6	15.1	5.1	3.0	2.0	1.4	1.1	0.6	0.5	0.2	0.1	----	----	-----
Year 1896.....	29.1	40.7	15.3	5.4	3.4	2.0	1.5	1.1	0.7	0.5	0.2	0.1	----	----	0.1
Year 1897.....	29.6	40.6	15.0	5.6	3.3	1.9	1.4	1.0	0.7	0.6	0.2	0.1	----	----	-----
Year 1898.....	28.0	41.9	15.1	5.7	3.4	1.9	1.5	1.0	0.6	0.4	0.3	----	----	----	-----

PART IV.—DIVORCES IN MICHIGAN DURING THE YEAR 1898.

There were 1,808 divorces granted in Michigan during the year 1898 and returned by the county clerks to the Department of State. Their distribution by counties, together with the place of marriage, number of children in the families broken up by divorce and the duration of marriage prior to divorce, may be seen in Table II on page 122. In Table 9, p. xlii, may be found the divorce rates for each county, based upon the total estimated population for the year 1898, which may be conveniently compared with the marriage rates given in the same table.

The divorce rate for the year¹ was 1.5 persons divorced per 1,000 estimated population, as compared with a marriage rate of 16.9 persons married per 1,000 population. The ratio of divorces to marriages was 9.0 per cent, or as sometimes stated, there was one divorce to about every 11 marriages. The comparison of divorces directly with the number of marriages in the same year is an improper one, since the divorces granted are the outcome of marriages performed for many years prior. It serves, however, sufficiently well to show the very large proportions of the divorce business in this State at present, although it is a distinct understatement of the total amount. The statistics for the year are based entirely upon the actual returns of divorces in the schedules reported by the county clerks and compiled in Tables II and III, pp. 122 and 132. An attempt was made to have the clerks file summaries of the divorce business in their courts, but as is always the case when any statistical returns are required from the county clerks' offices, the reports are so imperfect, and in some cases so contradictory, as to be quite worthless for exact deductions. The figures, such as they are, are given in Table I, p. 119, and according to this statement there were really 1,901 divorces granted in Michigan during the year instead of 1,808 as returned. The difference of 93 may be in part accounted for by the fact that some clerks do not enter a decree in divorces actually granted unless the fee is paid for the same. The result is that some decrees are never entered, and parties have been known to enter into new marriages when no legal record of the dissolution of the former marriages was in existence.

In this connection it is suggested that it be made the rule in our courts for the payment of a sufficient fee at the commencement of every suit to cover the final entry of the disposition of the case, thus making our court records complete in this important respect. Clerks may also conveniently enter the ages of the parties upon the petitions at this time and thus have the necessary data for their returns.

Table I, however inaccurate the statements of the county clerks may be in some cases, does show the large disproportion existing between divorces granted and divorces refused, and also indicates, although per-

haps not very accurately, the large volume of unsettled cases that are carried along from year to year. It is not likely that the number of pending cases increased from 2,475 at the beginning of the year to 3,323 at the end of the year; this was simply inaccurate bookkeeping due to understatement of the number pending at the beginning of the year. The net increase may have been correct, but its proportion to the total number of cases pending is probably less. The number of new bills filed, 2,898, or nearly a thousand more than the number returned as granted (Table II), is suggestive of the fact that only about two-thirds of the families actually broken up by conditions leading to applications for divorce are represented by the statement of divorces granted.

DIVORCES AS AN INDICATION OF IMMORALITY.

It is perhaps generally assumed that the large increase of divorces in this country of recent years is an evil, and that as indicative of a tendency to subvert the family, an institution which is justly considered as lying at the foundation of our system of free government, the general prevalence of the "divorce evil" is an unmixed misfortune to society. This may be true to a greater or less degree, but nevertheless it should be remembered that divorces, in themselves, are not so much the cause as the results of lessened social cohesion. A high divorce rate is not flattering to a State or country but it may be preferable to a very low one brought about by laws rigidly restricting the granting of divorces and accompanied by the most flagrant and unconcealed immorality. Thus Michigan, with her thousands of divorces each year, and the Province of Ontario, Canada, where divorces are granted only by special act of parliament, and whose divorce rate (1.6 per 100,000 couples married) is probably the lowest in the world, are not really so far apart in moral conditions, as measured by divorces, as these figures would indicate. The Detroit, St. Clair and St. Mary's rivers separate people of probably nearly identical moral status, besides the fact that the localities of Michigan largely settled by Canadian immigrants are not those most free from divorces. Divorce may be considered, in one sense, as a sort of safety valve, allowing of the expansion and escape of elements which would otherwise destroy many of the settled conditions of society.

The fact that a low divorce rate may be solely due to the difficulty of obtaining divorces under restrictive laws, and that when such laws are relaxed, a community may take instant advantage of the greater liberty (or license) permitted, is well shown in the recent history of New South Wales. This Australian colony, a typical example of the English colonial possessions and settled by a race of almost purely English descent, had up to the year 1892 a very low divorce rate. The average number per annum was only 40 for the five years ending in 1890, or about 26.4 per 100,000 married couples. The rate for the United States was nearly ten times as great. In 1892 a law was passed giving greater freedom to the granting of divorces, and the result, as stated by the official statistician, was that "the business of the divorce court has grown enormously; indeed, so much has this been the case that out of a total of 2,922 petitions for divorce and 223 for judicial separation presented to the court from 1873 to the end of 1898, no less than 2,264 petitions for divorce and 155 for judicial separation were presented in the course of the last seven years." The safety valve has certainly been opened here

with a vengeance! What must have been the condition of the married couples prior to the passage of more liberal laws, which they are so eager to take advantage of? We cannot tell, but a clue may be given by the fact that in New South Wales, a purely Anglo-Saxon community and inheritor of some of the best blood and the best traditions of the English race, a more shocking condition of actual immorality exists to-day, as revealed by the incontrovertible official statistics, than in the most wicked capitals of the most degenerate nations of Europe. Relative to an investigation of illegitimate births and ante-nuptial conceptions of first-born children of legitimate birth, Dr. T. A. Coghlan, Government Statistician, *Wealth and Progress of New South Wales, 1898-99*, p. 601, says:

For all ages the number of illegitimate births forms 26.31 per cent of the first births; the number of children born within nine months of marriage equals 23.80 per cent; while the number of children born nine months and upwards from date of marriage equals 49.89 per cent, or a little less than one-half of the total. The prevalence of births of ante-nuptial conception is a matter very little understood, but when it is stated that nearly one-third (32.3 per cent) of legitimate first births are due to prenuptial intercourse, the seriousness of affairs will be seen. During the years 1893-98 there were 13,366 marriages in respect of which there was ante-nuptial conception, and as there were altogether 49,641 marriages during that period, at least 27 marriages in a hundred followed conception. The above figures throw a strong side light on the morals of the community.

CHILDREN AFFECTED BY DISSOLUTION OF FAMILIES, 1898.

In Table II, p. 122, may be found the number of children deprived of their natural protection in the family by the granting of divorces in each county of the State. The total number for the State is given in Table 67, according to which there were 1,952 children or an average of about one child to each divorce granted in the State. Of course many of the couples separated (890 or 49.2 per cent) had no children, but the average is brought up to one per divorce by the number of families having two or more children which were broken up during the year.

Table 67.—*Children affected by divorces in Michigan during the year 1898, showing the relation of sex of complainant to size of family.*

Complainants.	Total divorces granted, 1898.	Number of children in family.											
		None.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Unk.
Total divorces...	1,808	890	412	239	115	66	34	17	10	8	3	2	12
Husbands.....	472	288	77	48	24	21	3	2	-----	2	-----	-----	7
Wives.....	1,336	602	335	191	91	45	31	15	10	6	3	2	5
Per cent of husbands.....	26.1	34.4	18.7	20.1	20.9	31.8	8.8	11.8	-----	25.0	-----	-----	58.3
Percent of wives.....	73.9	65.6	81.3	79.9	79.1	68.2	91.2	88.2	100.0	75.0	100.0	100.0	41.7
Total number of children affected	1,952	0	412	478	345	264	170	102	70	64	27	20	-----

The table also indicates the influence of the number of children in the family as related to the sex of the applicants for divorces. Nearly three-quarters of all the divorces granted are on the applications of the wives, but this ratio is somewhat less for couples having no children. Only two-thirds of the applications granted to childless couples were on the application of wives. About four-fifths of the cases involving one, two or three children were instituted by the wives, while for numbers above three children to the family, the divorces granted for a single year are probably too few to afford accurate deductions. The relations of the number of children in the family to the causes of divorce may be found in Table III, p. 132.

DURATION OF MARRIAGES PRIOR TO DIVORCES GRANTED IN MICHIGAN, 1898.

In Table 68 the duration of marriages prior to the divorces which sundered them during the year may be found, by sex of the parties making application for the divorces. The corresponding data by counties may be examined in Table II, p. 122. No special relation is apparent between the sex of applicants and the duration of marriage, except that a higher proportion of applications of husbands than the average is given for the first year. Out of the total number of divorces granted, a little over one-fourth (494 or 27.3 per cent) were to couples who had lived together less than five years; nearly one-third (583 or 32.2 per cent) to couples married from 5 to 9 years, both inclusive; and the remainder to couples married over 10 years. Ten divorces were granted to couples who had been married over 35 years and one to a couple married nearly half a century.

Table 68.—*Duration of marriages terminated by divorces granted in Michigan during the year 1898, showing the relation of sex of complainant to lapse of time before divorce.*

Complainants.	Divorces granted, 1898.	Duration of marriage before divorce.															
		Years under 5.					Five-year periods.										
		Under 1 year.	1.	2.	3.	4.	Under 5 years.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	Unk.
Total divorces.....	1,808	27	83	131	129	124	494	583	313	195	127	69	12	10	....	1	4
Husbands.....	472	10	19	32	35	46	142	155	75	38	34	22	2	3	....	....	1
Wives.....	1,336	17	64	99	94	78	352	428	238	157	93	47	10	7	....	1	3
Per cent of husbands..	26.1	37.0	22.9	24.4	27.1	37.1	28.7	26.6	30.0	19.5	26.8	31.9	16.7	30.0	....	....	25.0
Per cent of wives.....	73.9	63.0	77.1	75.6	72.9	62.9	71.3	73.4	70.0	80.5	73.2	68.1	83.3	70.0	....	....	75.0

PLACE OF MARRIAGE OF PERSONS DIVORCED IN MICHIGAN, 1898.

It has frequently been asserted, not more in regard to Michigan than in regard to other states having relatively facile divorce laws, that many persons enter them from other states in order to obtain divorces. This contention is not borne out by the examination of the data in Table II,

p. 122, which has been compiled in such a way as to throw direct light on this proposition. It there appears that out of the 1,808 divorces granted during the year, no less than 1,468 of them, or 81.2 per cent, were of marriages originally performed in Michigan. Only 78 were from the adjacent states of Ohio, Indiana and Wisconsin, and 111 from Canada. It is possible that a portion of the Canadian marriages dissolved may have been those of persons who entered the State for this purpose, as it is practically impossible to obtain a divorce in Canada, but the number is not large enough, considering our large Canadian population, to show a very marked movement in this direction.

CAUSES OF DIVORCES GRANTED IN MICHIGAN, 1898.

The alleged causes for which divorces were granted in Michigan during the year 1898 are fully shown in Table III, p. 132, in their various combinations. It will be observed that in a large proportion of the cases there are two or more causes alleged, and it is of course impossible to decide which, if any, were the chief or determining causes. For this reason a strictly alphabetical arrangement has been followed, which will be readily understood after examining the table, and the number of divorces from a given cause, either as the sole element of the divorce or as a factor, may be determined. In this connection an extract from the laws of Michigan governing the granting of divorces will be useful:

(8621.) SEC. 6. A divorce from the bonds of matrimony may be decreed by the circuit court of the county where the parties, or one of them, reside, or by the court of chancery, on the application by petition or bill of the aggrieved party, in either of the following cases:

First, Whenever **adultery** has been committed by any husband or wife;

Second, When one of the parties was **physically incompetent** at the time of the marriage;

Third, When one of the parties has been sentenced to **imprisonment** in any prison, jail or house of correction, for three years or more; and no pardon granted to the party so sentenced, after a divorce for that cause, shall restore such party to his or her conjugal rights;

Fourth, When either party shall **desert** the other for a term of two years;

Fifth, When the husband or wife shall have become an habitual **drunkard**;

Sixth, And the circuit courts may, in their discretion, upon application, as in other cases, divorce from the bonds of matrimony any party who is a resident of this State, and whose husband or wife shall have obtained a **divorce in any other state**.

(8622.) SEC. 7. A divorce from bed and board forever, or for a limited time, may be decreed for the ground of **extreme cruelty**, whether practiced by using personal violence, or by any other means; or for utter **desertion** by either of the parties for the term of two years; and a like divorce may be decreed on the complaint of the wife, when the husband, being of sufficient ability to provide a suitable maintenance for her, shall grossly or wantonly and cruelly refuse or neglect so to do [**non-support**].

As a matter of fact, the great bulk of the divorces granted in Michigan are for five principal causes, which may be stated in the order of their importance: (1) Cruelty; (2) desertion; (3) non-support; (4) drunkenness; (5) adultery. This statement is based on the frequency of their appearance not only as sole causes but also as contributory causes in Table III, p. 132. As their frequency is different among the divorces granted to husbands and wives, it will be of interest to consider the distribution of these leading causes by the aid of Table 69.

Table 69.—*Principal causes of divorce in Michigan during the year 1898, showing, by sex, the percentage of complainants from each cause.*

Causes alleged.	Number of divorces granted, 1898.			Per cent of total.		
	Total.	To husbands.	To wives.	Total.	To husbands.	To wives.
ALL CAUSES	1,808	472	1,336	100.0	100.0	100.0
<i>Adultery</i>	58	37	21	3.2	7.8	1.6
Adultery (sole cause alleged).....	43	30	13	2.4	6.4	1.0
Adultery (with other causes).....	15	7	8	0.8	1.5	0.6
<i>Cruelty</i>	854	179	675	47.2	37.9	50.5
Cruelty (sole cause alleged).....	551	158	393	30.5	33.5	29.4
Cruelty (with other causes).....	303	21	282	16.8	4.4	21.1
<i>Desertion</i>	646	264	382	35.7	55.9	28.6
Desertion (sole cause alleged).....	480	245	235	26.5	51.9	17.6
Desertion (with other causes).....	166	19	147	9.2	4.0	11.0
<i>Drunkenness</i>	89	5	84	4.9	1.1	6.3
Drunkenness (sole cause alleged).....	30	4	26	1.7	0.8	1.9
Drunkenness (with other causes).....	59	1	58	3.3	0.2	4.3
<i>Non-support</i>	600	2	598	33.2	0.4	44.8
Non-support (sole cause alleged).....	241	-----	241	13.3	-----	18.0
Non-support (with other causes).....	359	2	357	19.9	0.4	26.7

In Table 69 it appears that nearly one-half (47.2 per cent) of all of the divorces granted alleged cruelty as the sole (30.5 per cent) or contributory cause. Next comes desertion, with 35.7 per cent (sole cause in 26.5 per cent) and non-support with 33.2 per cent (sole cause in only 13.3 per cent). For husbands the principal ground of complaint is desertion, alleged as a sole cause in 51.9 per cent and in 55.9 per cent of all cases. Cruelty was also inflicted upon many husbands (37.9 per cent) and formed the sole ground of their complaints in 33.5 per cent of the divorces granted to them. To wives over one-half (50.5 per cent), of the cases pleaded cruelty, but it was the sole cause in only 29.4 per cent. Non-support was nearly as frequently given as the cause (44.8 per cent) and was the sole cause in 18.0 per cent. Last among the more important causes was desertion, with 28.6 per cent of the total cases involving it and 17.6 per cent granted solely on account thereof. In some cases divorces granted upon a cross-bill may have been erroneously returned by the clerk upon the original allegation, which would perhaps account for the two cases in which the element of non-support figured in divorces granted to husbands.

PART V.—BIRTHS IN MICHIGAN DURING THE YEAR 1898.

According to the returns received from the county clerks of Michigan and based on the returns made to them by supervisors and assessors, there were 43,462 births in the State during the year 1898. This number is 226 less than the number of births returned for 1897, and represents a birth rate of 18.2 per 1,000 estimated reporting population.

ENUMERATION OF BIRTHS BY SUPERVISORS AND ASSESSORS GROSSLY IMPERFECT.

It is hardly worth while to attempt to seriously discuss these figures. The enumeration of births by the supervisors of Michigan (by the assessors in certain cities and by special enumerators appointed by the common council in Detroit) is little more than a farce, so far as completeness is concerned. The enumeration is made, or supposed to be made, in the spring, between the tenth day of April and the end of May, at the same time that the supervisor or assessor is making the assessment and collecting other statistics. If a house to house inquiry were honestly conducted by the supervisors and assessors it is probable that most of the births would be obtained. Not all of them could possibly be obtained by an enumeration conducted after the close of the year, as some families have moved out of the districts where the births occurred and others have forgotten the exact dates of birth, etc. At present, however, the enumeration made by many supervisors is merely perfunctory. All of the domiciles in the township or village are not visited, and sometimes none of them, the list of births being jotted down in the supervisor's office from recollection. Not only are many births entirely omitted from the records, but even those registered, especially after they have been copied in the county clerks' offices, are often grossly incorrect in important personal and statistical details. In some years the returns have been falsified deliberately in order to obtain increased compensation for returns, so that, taking it altogether, the statistics of births in Michigan hardly repay serious study in several of the most important respects.

As an illustration of the worthlessness of the returns as statistics and the serious loss that may occur to many citizens of the State in future owing to imperfect methods of keeping these records, a case recently brought to the notice of this Department may be of interest. It was desired to obtain official records of the births of four children belonging to two Italian families now residing in Lansing so that the same could be transmitted to Italy and made a matter of official record in that country. Under the more stringent laws in this respect obtaining in nearly all other countries, a record of birth is frequently absolutely indispensable in obtaining property bequeathed by relatives and in the establishment of various rights. Two of these births occurred in the city of Battle

Creek and two in the city of Lansing in recent years, and were duly attested by the parochial certificates of baptism. Nevertheless, the record of only a single birth could be found upon the official records of the State and county. The negligence of the assessors in these cities was thus responsible for the loss of three births out of four actually occurring in these families. While this was perhaps an extreme case, it is an unfortunate fact that very many of the requests for searches for births that actually occurred in this State have to be informed that there is no record, the supervisor or assessor having neglected his duty under the law.

THE REMEDY FOR INACCURATE RETURNS.

What has been stated in regard to the imperfect registration of births in this State was also true in regard to the registration of deaths until the passage of the law in 1897 requiring the immediate registration of deaths. Since that time, the accuracy of the mortality statistics has greatly improved, and it is very exceptional indeed to have a request for a certified copy of a certificate of death which cannot be found at once among the returns. The same method by which the returns of deaths were improved is equally applicable to the registration of births, but it will be found that it will be somewhat more difficult to carry it out in practice.

At the present time not a State in the Union, and probably not a single city, has an absolutely accurate registration of births. This fact of itself shows the great difficulties in the way of registering this class of statistics. The sentiment of the people is not sufficiently educated as to the importance of making a record of the birth of all children and will not stand back of the stringent action necessary to secure complete registration by means of the prosecution of delinquents. In time this difficulty will be removed, as is already the case in the registration of deaths, and public sentiment will warrant the enactment and thorough enforcement of an adequate law for the registration of births.

Such a law must require, in order to be effective, certain things. These are: (1) Immediate registration. A certificate of birth must be filed with the local registrar within a short specified time after birth (perhaps three days). (2) A person legally responsible for such filing, probably the physician, midwife, or if neither be present, then the parent, householder or relative. The responsibility should be clearly fixed in the law, so that in case of neglect there will be no doubt as to whom the penalty should be applied. (3) Efficient local enforcement of the law by making the local registrar responsible, under penalty for failure to perform his duty, for the efficient securing of the returns in his district. This he can do by recourse to the prosecuting attorney or the State Department when compliance with the law is refused. (4) Active central administration of the law, with the aid of the Attorney General of the State, and of the prosecuting attorneys of the counties to secure vigilant enforcement of the law by the local officials. (5) Sufficient compensation not only to the local registrars but also to the physicians and midwives who make returns. A small fee to the latter, while not absolutely indispensable to the law, since these reports can be compelled under the general police power of the State, will nevertheless greatly facilitate its practical ad-

ministration and remove many difficulties. It is surprising to see how effective the small fee for the returns by local registrars is in securing prompt and accurate returns.

PRESENT RETURNS OF BIRTHS VALUABLE FOR CERTAIN LIMITED PURPOSES.

While the present returns of births are not complete enough so that any reliable birth rate can be computed for the year, either for the State or for any of the counties therein, the number of births reported is still sufficiently large so that some ratios dependent not so much upon the complete returns as upon the representative character of the partial returns made, may be computed. With over 40,000 births reported, we have more than sufficient for a fair sample of the births that actually occurred, and as inspection of the ratios of the native and foreign parents returned from year to year will show, there is such an amount of agreement in the indications derived as to lead us to suppose that the conclusions are correct. Probably a very much smaller amount of statistics, if carefully selected for the State, would have been equally accurate.

The small amount of value which the returns of births under the present law undoubtedly possess should not interfere with the movement to establish a modern law for the reliable registration of these important events, since all of the present information of value, together with much at present out of our reach, will be then obtained. Care should be taken that the proper principles are regarded so that a new law may not be enacted which will be quite as defective or even more so than the old one. Unless a thoroughgoing improvement of these statistics is really desired and can be maintained by consistent legislative action for several years, it will be better not to attempt any changes in the present law.

SUMMARY OF THE ENUMERATION OF BIRTHS FOR THE YEAR 1898.

The following statements include the more important features of the enumeration of births in Michigan for the year 1898:

Total number of births returned, 1898.....	43,462
Birth rate per 1,000 estimated population, 1898.....	18.2

Exclusive of stillbirths, there were:

Children born alive, 1898.....	42,910
Children born alive per 1,000 population, 1898.....	18.0

Compared with the previous year, we have:

Decrease of births returned for 1898 (43,462) from the number returned for 1897 (43,688).....	226
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The following is the distribution of births returned according to sex:

Male children born, 1898.....	22,420
Female children born, 1898.....	20,972
Sex unknown or unspecified (38 of these stillborn).....	70
Males born per 100 births of females.....	107

The parent nativity of children born in 1898, exclusive of births to parents of different nativities, may be stated:

Born of parents both of native birth, 1898.....	19,468
Born of parents both of foreign birth, 1898.....	14,314

Of the 43,462 children born in 1898, according to the returns, there were:

Stillbirths (males, 296; females, 218; unknown, 38).....	552
Stillbirth rate per 1,000 population.....	0.2
Stillbirths per 1,000 births.....	12.9

Plural births are of interest. Including six sets of triplets, there were reported:

Twin children (males, 479; females, 398; unknown sex, 5).....	882
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The reported rate of illegitimacy is low for Michigan. In 1898 there were returned:

Illegitimate births (males, 281; females, 254; unknown, 2).....	537
Illegitimate births per 1,000 births, 1898.....	12.4

BIRTHS RETURNED BY MONTHS, 1889-98.

Table 70.—*Births returned, by months, for the years 1889-98 inclusive; with average for the ten-year period. (Stillbirths included.)*

Years.	Total for year.	Months.												
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
1889.....	49,272	3,340	3,104	4,001	4,057	4,238	4,050	4,252	4,526	4,382	4,292	4,331	4,646	53
1890.....	52,306	4,130	3,718	4,356	4,407	4,568	4,313	4,397	4,651	4,517	4,219	4,223	4,765	42
1891.....	50,812	3,629	3,534	4,345	4,238	4,465	4,078	4,293	4,702	4,646	4,340	4,098	4,391	53
1892.....	46,221	3,226	3,315	3,745	3,928	3,977	3,681	3,929	4,168	4,088	3,918	3,853	4,344	49
1893.....	47,732	3,346	3,391	4,069	3,934	3,924	3,901	4,158	4,351	4,246	4,165	3,916	4,263	58
1894.....	44,596	2,889	3,020	3,854	3,896	3,866	3,735	3,917	3,981	3,778	3,750	3,684	4,204	22
1895.....	46,273	3,204	3,240	3,827	3,742	4,022	3,745	3,989	4,346	4,214	3,997	3,750	4,159	38
1896.....	46,302	3,322	3,184	3,781	3,862	3,918	3,697	3,879	4,405	4,208	3,994	3,842	4,155	55
1897.....	43,688	3,265	3,207	3,777	3,654	3,794	3,423	3,739	3,863	3,853	3,717	3,571	3,767	28
1898.....	43,462	3,043	3,173	3,856	3,534	3,724	3,554	3,612	3,894	3,807	3,801	3,492	3,920	52
Average, 1889-98..	47,066	3,342	3,289	3,961	3,925	4,050	3,818	4,017	4,289	4,174	4,019	3,876	4,261	45

Maxima in bold face type; minima in italics.

In Table 70 the number of births actually returned for each month of the past ten years is displayed. Considerable regularity is seen in the data, although the returns by months are largely vitiated by the fact that the number returned for a given month does not depend entirely upon the number that actually occurred, but is increased or diminished by the nearness or remoteness from the date of enumeration in May of the following year. If all of the months were precisely equal in reality, then the returns would show a gradual increase from January to December. Thus the fact that all of the minimal months (indicated by italics) are either January or February loses much of its significance as related to the actual distribution of births in the year, and also the fact that December

shows the largest number of births in five out of the ten years in question is also discounted by the position of the month in the year. On the other hand the high position of August in the scale is probably nearly correct, and more births actually occur at this time than at other seasons of the year.

On account of the great inaccuracy of the returns by months, no table showing the relative rank of the months has been prepared, as for marriages and deaths, nor can any comparison of birth rates and marriage rates or death rates be made by months.

NATIVITY OF PARENTS OF CHILDREN BORN IN MICHIGAN, 1898.

This item of natality statistics is not so dependent upon complete returns as some other branches of the subject, hence the information contained in the three tables following may be assumed to be fairly reliable. In Table 71 the number and per cents of the several classes of parents are shown, by which it appears that 19,468 children were born to parents of native birth, or 44.8 per cent of the total number born during the year. There were 14,318 or 32.9 per cent born to foreign parents, besides various combinations of native and foreign parentage and couples with the nativity of one or both unstated. The aggregate number of children having one or both parents of native birth was 28,274 or 65.1 per cent, while the aggregate number having one or both parents of foreign birth was 22,955 or 52.8 per cent.

Table 71.—*Parent nativity of children born in Michigan, during the year 1898. (Still-births included.)*

Nativity of parents of children born, 1898.	Number of births, 1898.				Per cent of total.			
	Total	Males.	Fe-males.	Un-known.	Total.	Males.	Fe-males.	Un-known.
All nativities	43,462	22,420	20,972	70	.....	100.0	100.0	100.0
Both parents native born	19,468	10,074	9,368	26	44.8	44.9	44.7	37.1
Both parents foreign born	14,318	7,389	6,916	13	32.9	33.0	33.0	18.6
Foreign father and native mother	5,208	2,663	2,538	7	12.0	11.9	12.1	10.0
Foreign mother and native father	3,162	1,612	1,547	3	7.3	7.2	7.4	4.3
Unknown mother, father native	142	69	73	-----	0.3	0.3	0.3	-----
Unknown mother, father foreign	118	64	52	2	0.3	0.3	0.2	2.9
Unknown father, mother native	294	150	141	3	0.7	0.7	0.7	4.3
Unknown father, mother foreign	149	82	67	-----	0.3	0.4	0.3	-----
Both unknown	603	317	270	16	1.4	1.4	1.3	22.9
One or both native*	28,274	14,568	13,667	39	65.1	65.0	65.1	55.7
One or both foreign*	22,955	11,810	11,120	25	52.8	52.7	53.0	35.7

* Including cases where nativity of either parent is unknown.

Tables 72 and 73 enable comparisons of the more important ratios in Table 71 to be made with previous years, and quinquennial periods. It

appears that the percentage of native parents is higher than for any recent year of registration, but is exceeded by some of the first years on record. The percentage of parents both of foreign birth is the lowest on record. The latter fact would seem to be related to the fact that during the recent financial depression in this country, the decrease in the number of marriages was greater for foreign than for native born persons.

Table 72.—*Parent nativity of children born in Michigan for each of the years 1889-98, inclusive; with average for the ten-year period. (Stillbirths included.)*

Years.	Nativity of parents of children,—per cent of total.												
	Both native born.	Both foreign born.	Foreign father and native mother.	Foreign mother and native father.	One or both unknown.	Father—			Mother—			One or both parents native born.*	One or both parents foreign born.*
						Native.	Foreign.	Unknown.	Native.	Foreign.	Unknown.		
1889.....	41.8	39.0	10.7	6.0	2.6	48.1	49.9	2.1	52.9	45.1	2.0	59.1	56.0
1890.....	41.8	38.4	10.8	6.0	3.0	48.3	49.5	2.2	53.1	44.6	2.3	59.6	55.8
1891.....	40.2	39.8	10.8	6.1	3.1	46.9	51.0	2.1	51.3	46.2	2.5	58.0	57.4
1892.....	39.7	39.7	10.9	6.3	3.3	46.7	51.0	2.3	51.3	46.2	2.5	58.2	57.5
1893.....	41.1	38.5	11.0	6.6	2.9	48.0	50.0	2.1	52.6	45.3	2.1	59.5	56.7
1894.....	43.0	35.6	11.4	6.8	3.3	50.4	47.9	1.7	54.9	42.5	2.6	62.3	54.8
1895.....	43.4	35.5	11.3	6.8	3.0	50.7	47.0	2.2	55.3	42.5	2.2	62.6	54.1
1896.....	43.0	35.5	11.8	6.8	3.0	50.0	47.5	2.5	55.3	42.5	2.3	62.3	54.5
1897.....	43.6	34.3	11.7	7.2	3.0	51.2	46.2	2.6	55.9	41.8	2.4	63.3	53.6
1898.....	44.8	32.9	12.0	7.3	3.0	52.4	45.2	2.4	57.5	40.6	2.0	65.1	52.8
Average, 1889-98.	42.2	36.9	11.2	6.6	3.0	49.3	48.5	2.2	54.0	43.7	2.3	61.0	55.3

* Including cases where nativity of either parent is unknown.

Table 73.—*Parent nativity of children born in Michigan during the year 1898, compared with averages for five quinquennial periods, 1871-95. (Stillbirths included.)*

Years and periods averaged.	Nativity of parents,—per cent of total.				
	Both native born.	Both foreign born.	Foreign father and native mother.	Native father and foreign mother.	One or both unknown.
Average, 1871-75.....	44.8	34.3	9.5	5.2	6.2
Average, 1876-80.....	46.0	34.1	11.0	5.7	3.1
Average, 1881-85.....	43.7	35.5	11.5	6.2	2.9
Average, 1886-90.....	42.7	37.6	10.7	6.2	2.8
Average, 1891-95.....	41.5	37.8	11.1	6.5	3.1
Year 1895.....	43.4	35.5	11.3	6.3	3.0
Year 1896.....	43.0	35.5	11.8	6.3	3.0
Year 1897.....	43.6	34.3	11.7	7.2	3.0
Year 1898.....	44.8	32.9	12.0	7.3	3.0

STILLBIRTHS, TWINS AND ILLEGITIMATES.

The data relating to these classes of births may be found in Tables IV and V, p. 151. The statistics of births as a whole are so imperfect that it will hardly be worth while to deduce the various ratios between these births considered with reference to nativity, etc. For stillbirths even the total number, which is derived entirely from the returns of births, is grossly imperfect. This we know from the fact that no less than 1,300 stillbirths were returned as deaths by the registrars under the new law for the year 1898 (See Table II, *Deaths*, p. 20), while the returns from the supervisors and assessors afforded only 552. There are frequently irregularities in the statement of plural births owing to the negligence of county clerks or the copyists employed by them, while for obvious reasons the original returns of illegitimates by the enumeration officers cannot be taken as complete. Accurate information in regard to these important classes of natality statistics would be one of the important advantages of an improved system for the registration of births.

A DECREASING BIRTH RATE IN MICHIGAN.

Study of the evidence afforded by the returns of births in Michigan, imperfect as they are, leads to the conclusion that the birth rate of the State has diminished in recent years, especially for the native born population. In recent reports, notably in that for the year 1894, the subject was discussed on the basis of the best statistical evidence obtainable, and the conclusion was reached that the native population of Michigan does not now afford enough children per marriage to maintain itself intact. While not peculiar to this State, this condition is sufficiently important to call general attention to this subject, and it is to be hoped that at some not very distant time the more satisfactory methods of statistical analysis possible with correct records of births may be applicable. Until the improvement in our birth registration, however, it seemed unwise to devote further time to the elaboration of figures whose conclusiveness is to some considerable degree vitiated by the known incompleteness of the data. Official statistics should be fully reliable and only such methods of collecting the data should be employed as will insure this fundamental requisite.

CLIMATOLOGICAL DATA FOR MICHIGAN, 1898.

The following data related to the meteorological conditions in Michigan for the year 1898 have been kindly supplied to this Department by Mr. C. F. Schneider, Director of the Michigan State Weather Service in co-operation with the Climate and Crop Service of the Weather Bureau, U. S. Department of Agriculture. Fuller details may be found in the annual report of the State Weather Service for the year, but the data herewith presented will be found convenient for comparing with the mortality statistics contained in this report.

In connection with the text and tables on this subject, two maps are presented, reduced from those which appeared in the publication of the Weather Service, and showing the annual mean isotherms and prevailing winds (Map II) and the amount of precipitation in various parts of the State (Map III). It will be observed that the very important data contained in Table 75 are arranged according to the same geographical sections employed in the study of causes of death, (Table 20, p. lxxvi), thus making the comparison of mortality statistics and meteorological data very convenient. These sections are shown in Map I, p. xli.

Table 74.—*Temperature and amount of precipitation in Michigan during the year 1898, compared with previous years.*

Year.	Temperature.					Average yearly precipitation. (inches)	Average total snowfall. (inches)
	Yearly mean.	Highest.	Date.	Lowest.	Date.		
1888.	43.8	102	June 17.....	—36	{ January 21.....	28.68	67.9
1889.	45.3	102	July 8.....	—33	{ February 9.....		
1890.	45.6	104	August 3.....	—35	February 24.....	26.86	57.7
1891.	46.2	103	August 8.....	—28	March 6.....	34.23	44.6
1892.	44.6	101	July 26.....	—26	February 4.....	30.65	42.8
			{ June 20.....		January 20.....	33.69	50.1
1893.	43.6	100	{ July 13.....	—31	January 15.....	34.55	81.2
			{ August 10.....				
1894.	46.8	102	July 27.....	—31	February 24.....	28.00	45.2
1895.	44.6	101	July 7.....	—38	February 6.....	26.90	71.4
1896.	45.8	100	June 6.....	—29	February 17.....	31.74	42.8
1897.	44.9	104	July 19.....	—43	February 26.....	31.23	57.0
Normal.	45.1	102	July 14.....	—33	February 10.....	30.65	56.1
1898.	46.0	101	{ July 24.....	—35	December 31.....	32.29	61.5
			{ August 23.....				

In Table 74 the temperature and amount of precipitation for the year are compared with the years 1888-97, both inclusive, this period extending back to the formation of the State Weather Service. The average of the

statistics for these years constitutes the "normal" which is used as a basis of reference in making comparisons of the meteorology of the current year.

REVIEW OF THE YEAR, 1898.

The annual mean temperature for 1898 for Michigan was 46.0 degrees, or 0.9 of a degree *above* the normal, which is computed by averaging the yearly mean temperatures of the 10 preceding years. March was comparatively a very warm month, being 7.2 degrees warmer than the average March. December was a cold month, the deficiency, 3.4 degrees, being the greatest which obtained during any month of the year. Altogether there were 9 months above the normal and 3 months below the normal.

The highest temperature of the year, 101 degrees, occurred on July 24, at Clinton, Lenawee county, and on August 23, at Owosso; the lowest temperature, 35 degrees below zero, occurred on December 31, at Humboldt, Marquette county.

MAP II.—ANNUAL MEAN ISOTHERMS AND PREVAILING WINDS IN MICHIGAN, 1898.



MAP III.—TOTAL PRECIPITATION IN MICHIGAN, 1898.



METEOROLOGICAL CONDITIONS BY MONTH, 1898.

January.—The mean temperature was 23.9 degrees, or 2.7 degrees above the normal. The highest temperature, 63 degrees, occurred on the 12th at Coldwater, Branch county, and at Grape, Monroe county; the lowest was 19 degrees below zero, and occurred at Humboldt, Marquette county, on the 28th, and at Omer, Arenac county, on the 30th.

The average total precipitation was 2.91 inches, or 0.48 of an inch above the normal. The greatest monthly amount was 5.30 inches at Manistee; the least was 0.47 of an inch at Iron River, Iron county.

February.—The mean temperature was 22.4 degrees, or 1.3 degrees above the normal. The highest temperature, 59 degrees, occurred on the 11th at Ypsilanti, Washtenaw county, and at Grape, Monroe county; the lowest temperature, 22 degrees below zero, occurred at Baldwin, Lake county, on the 3d.

The average total precipitation was 2.36 inches, or 0.55 of an inch above the normal. The greatest monthly amount was 5.77 inches at Grand Rapids; the least monthly amount was 0.70 of an inch at Lake City, Missaukee county.

March.—The mean temperature was 35.4 degrees, or 7.2 degrees above the normal. The highest temperature, 72 degrees, occurred on the 16th at Vandalia and Mottville, and on the 21st at Berrien Springs; the lowest was 19 degrees below zero at Humboldt, on the 3d.

The average total precipitation was 3.20 inches, or 1.38 inches above the normal. The greatest monthly amount was 6.68 inches at Howell Junction; the least monthly amount was 0.80 of an inch at Sidnaw, Houghton county.

April.—The mean temperature was 42.3 degrees, or 0.7 of a degree below the normal. The highest temperature, 79 degrees, occurred at Mottville, St. Joseph county, on the 17th; the lowest temperature,—3 degrees, occurred at Sidnaw, Houghton county, on the 5th.

The average total precipitation was 1.66 inches, or 0.76 of an inch below the normal. The greatest monthly amount was 3.58 inches at Northport, Leelanau county. The least monthly amount was 0.19 of an inch at Rockland, Ontonagon county.

May.—The mean temperature was 55.1 degrees, or 1.2 degrees above the normal. The highest was 88 degrees on the 23d at Clinton, Lenawee county. The lowest was 20 degrees on the 4th at Humboldt, Marquette county.

The average total precipitation was 2.53 inches, or 1.00 inch below the normal; the greatest monthly amount, 6.23 inches, fell at Baraga, Baraga county, and the least, 1.20 inches, at Mt. Clemens, Macomb county.

June.—The mean temperature was 65.7 degrees, or 0.4 of a degree above the normal. The highest was 96 degrees at Allegan on the 5th, Ionia on the 24th, and at Rogers City on the 25th. The lowest was 27 degrees at Iron River on the 15th.

The average total precipitation was 3.61 inches, or 0.41 of an inch above the normal. The greatest monthly amount, 7.29 inches, occurred at West Harrisville, and the least, 0.80 of an inch, fell at Hart.

July.—The mean temperature was 69.9 degrees, or 1.2 degrees above the normal. The highest temperature was 101 degrees on the 24th at Clinton, Lenawee county, and at Mottville, St. Joseph county. The lowest was 25 degrees on the 11th at Baldwin, Lake county.

The average total precipitation was 1.57 inches, or 1.02 inches below the normal. The greatest monthly amount, 4.55 inches, occurred at St. Ignace; the least monthly amount, 0.15 of an inch, fell at Fitchburg, Ingham county.

August.—The mean temperature was 67.4 degrees, or 1.5 degrees above the normal. The highest temperature was 101 degrees on the 23d at

Owosso, Shiawassee county. The lowest temperature was 28 degrees, and occurred at Newberry, Luce county, on the 19th.

The average total precipitation was 2.88 inches, or 0.36 of an inch below the normal. The greatest monthly amount, 5.92 inches, occurred at Gladwin, Gladwin county; the least monthly amount, 0.75 of an inch, fell at Mt. Clemens, Macomb county.

September.—The mean temperature was 63.0 degrees, or 3.0 degrees above the normal. The highest temperature was 99 degrees on the 3d at Owosso, Shiawassee county. The lowest temperature was 18 degrees on the 10th at Humboldt, Marquette county.

The average total precipitation was 2.76 inches, or 0.02 of an inch above the normal. The greatest monthly amount, 6.10 inches, fell at Mt. Clemens, Macomb county, and the least monthly amount, 1.20 inches, occurred at Manistee, Manistee county.

October.—The mean temperature was 49.1 degrees, or 1.7 degrees above the normal. The highest temperature was 93 degrees at Clinton, Lenawee county, on the 3d. The lowest temperature was 13 degrees at Ewen, Ontonagon county, on the 27th.

The average total precipitation was 4.38 inches, or 2.10 inches above the normal. The greatest monthly amount, 7.38 inches, occurred at Mottville, St. Joseph county. The least monthly amount was 1.04 inches at Sidnaw, Houghton county.

November.—The mean temperature was 34.6 degrees, or 0.3 of a degree below the normal. The highest temperature was 73 degrees and it occurred at Midland, on the 4th; the lowest temperature was —7 degrees, and occurred at Humboldt, on the 25th.

The average total precipitation was 2.56 inches, or 0.22 of an inch below the normal. The greatest monthly amount was 4.46 inches at Coldwater; the least monthly amount was 0.75 of an inch at Lathrop.

December.—The mean temperature, 23.1 degrees, or 3.4 degrees below the normal. The highest temperature was 54 degrees; it occurred at Fairview, Washtenaw county, on the 18th, and at Mottville, St. Joseph county, on the 29th. The lowest temperature was —35 degrees on the 31st at Humboldt, Marquette county.

The average total precipitation was 1.87 inches, or 0.25 of an inch below the normal. The greatest monthly precipitation, 3.62 inches, occurred at Ivan, Kalkaska county; the least, 0.25 of an inch, at Port Austin, Huron county.

CLIMATOLOGICAL DATA.

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Table 75.—*Temperature, precipitation, sky and direction of wind in Michigan for the State and geographical sections, 1898.*

Year and months by geographical sections.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.					Sky.			Prevailing direction of wind.	
	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall (unmelted.)	Number of days with precipitation.	Number clear days.	Number partly cloudy days.		Number cloudy days.
Year, 1898—STATE.....	46.0	+1.3	102	July 24	-35	Dec. 31	58	2.69	+0.11	4.72	61.5	8	10	9	11	s w
January.....	23.9	+2.7	63	12-24		30	49	2.91	+0.48	2.50	18.0	9	6	8	17	n w-s w
February.....	32.4	+1.3	59	10-11-22		3	51	2.36	-0.55	1.80	17.4	10	5	7	16	s w
March.....	35.4	+7.2	78	17-19		3	57	3.30	-1.38	2.02	2.6	10	11	8	12	s w
April.....	42.3	-0.7	79	17-3		5	54	1.66	-0.76	2.01	1.5	6	13	9	9	n w
May.....	55.1	+1.2	88	23-20		4	53	2.53	-1.00	2.72	T	9	13	9	9	s w
June.....	65.7	+0.4	96	5-24-25	27	15	54	3.61	+0.41	4.72	0	8	13	11	6	s w
July.....	69.9	+1.2	102	24-25		11	58	1.57	-1.02	2.90	0	5	19	9	3	s w
August.....	67.4	+1.5	101	23-28		19	52	2.88	-0.36	4.30	0	7	13	11	7	s w
September.....	63.0	+3.0	99	3-18		10	50	2.76	+0.02	2.92	0	8	14	9	7	s w
October.....	49.1	+1.7	93	3-10		27	44	4.38	+2.10	3.83	1.1	12	6	9	16	s w
November.....	34.6	-0.3	73	4-7		25	45	2.56	-0.22	2.30	8.9	9	8	7	15	s w
December.....	23.1	-3.4	54	18-29-35		31	45	1.87	-0.25	1.53	12.0	9	5	8	18	s w
Year, 1898—I. UPPER PENINSULA.....	40.8	+1.6	97	Sept. 2	-35	Dec. 31	58	2.31	-0.06	2.93	70.7	8	12	6	12	n w
January.....	18.4	+3.6	45	9-19		28-30	49	1.25	-1.49	1.00	12.8	7	10	5	16	n w-w
February.....	17.5	+3.8	54	8-21		15	51	2.09	+0.89	1.50	16.3	9	9	3	16	n w
March.....	28.2	+7.6	60	8-19		3	57	2.19	-0.81	1.49	13.5	8	14	5	12	s
April.....	38.0	+0.8	75	16-3		5	47	1.22	-0.94	2.01	5.3	4	17	6	7	n w
May.....	49.9	+1.1	83	7-8-20		4	53	3.45	-0.04	2.72	T	9	14	5	12	n w
June.....	59.3	+1.2	92	24-27		15	51	4.39	+2.04	2.50	0	10	15	6	9	n w
July.....	65.7	+0.4	96	18-28		10-11	58	2.25	-0.07	2.90	0	6	18	9	4	s
August.....	62.0	+0.0	96	31-28		19	52	2.44	-0.00	2.93	0	7	14	8	9	w
September.....	58.4	+2.8	97	2-18		10	47	2.28	-0.71	1.28	0	9	16	6	8	s-w
October.....	43.9	+0.4	78	3-10		27	44	3.25	+0.56	2.00	2.0	12	7	5	19	n w
November.....	32.1	+3.0	68	1-7		25	42	1.81	-0.83	1.64	8.1	8	9	5	16	s w
December.....	16.8	-3.5	48	1-35		31	39	1.15	-0.79	1.10	12.7	8	9	7	15	w
Year, 1898—II. NORTH ERN COUNTIES.....	44.5	+1.6	98	July 24	-24	Jan. 30	54	2.82	+0.47	4.72	82.8	8	11	8	11	s w
January.....	22.2	+2.8	47	18-24		30	46	3.42	+0.58	2.50	30.1	8	5	9	17	n w-s w
February.....	21.3	+2.2	49	12-22		3	41	2.14	+0.55	1.50	17.9	10	5	7	16	s w
March.....	33.2	+7.8	62	17-26-27	9	5	46	2.75	+0.90	1.35	3.2	8	11	8	12	s w
April.....	40.4	-0.8	74	27-0		5	54	2.13	-0.17	1.60	2.2	5	13	9	8	n w
May.....	53.0	+1.2	85	27-22		4	52	2.60	-0.49	2.00	0.1	8	14	9	8	n w
June.....	63.2	+0.1	96	25-31		20	54	4.35	+1.94	4.72	0	9	13	11	6	s w
July.....	68.2	+0.8	98	24-25		11	53	1.02	-1.12	2.00	0	3	20	8	3	s w
August.....	65.1	-0.4	97	31-37		27	44	3.99	+1.68	4.30	0	8	13	10	8	s w
September.....	61.6	+3.1	95	2-3-27		11	46	2.38	-0.47	1.81	0	7	15	9	6	s w
October.....	47.9	+2.0	86	2-16		27	43	4.88	+2.66	2.28	3.1	12	7	8	16	s-s w
November.....	34.9	+2.2	70	4-2		27	45	2.00	-0.47	1.41	7.9	8	8	7	15	s w
December.....	22.6	-3.1	48	29-16		13	44	2.03	+0.02	1.25	18.3	9	5	6	20	s w

Table 75.—CONCLUDED.—*Temperature, precipitation, sky and direction of wind.*

Year and months by geographical sections.	Temperature, in degrees Fahrenheit.						Precipitation, in inches.					Sky.			Prevailing direction of wind.	
	Mean.	Departure from the normal.	Highest.	Date.	Lowest.	Date.	Greatest daily range.	Total.	Departure from the normal.	Greatest in 24 hours.	Total snowfall (unmelted.)	Number of days with precipitation.	Number clear days.	Number partly cloudy days.		Number cloudy days.
Year, 1898.—III. CENTRAL COUNTIES.....	45.4	+1.0	98	July 24-25 Sept 3	-18	Jan. 29-30	50	2.55	+0.05	3.53	58.6	8	10	10	10	s w
January.....	24.3	+2.8	49	12	-18	29-30	40	2.95	+0.37	1.70	20.8	9	4	10	17	nw-s w
February.....	21.3	0.0	52	10-11	-14	1-2	42	2.30	-0.35	1.80	19.7	9	6	7	15	s w
March.....	35.3	+6.8	68	19	1	2-3-5	38	2.91	+1.29	1.50	0.2	9	9	11	11	s w
April.....	42.1	+2.0	71	16	11	3	45	1.74	-0.61	1.11	0.2	6	11	9	10	n w
May.....	55.4	-0.7	81	27-29	26	5-8	49	2.04	-0.90	1.70	0	8	13	9	9	s w
June.....	66.6	+0.4	94	24-25	35	21	47	3.35	+0.70	2.88	0	8	13	11	6	s w
July.....	70.3	+1.2	98	24-27	32	11	50	1.44	-1.20	1.55	0	3	21	8	2	s w
August.....	68.3	+1.8	97	23	39	27	43	3.43	+0.45	3.53	0	7	13	15	3	s w
September.....	63.5	+2.8	98	3	28	11	49	2.23	-0.33	2.58	0	6	14	11	5	s w
October.....	49.7	+2.8	88	3	26	27-29	41	4.44	+1.23	1.55	0.9	11	6	10	15	s w
November.....	35.1	-0.6	73	4	3	27	40	2.38	-0.12	1.90	9.9	8	7	11	12	s w
December.....	24.7	-3.2	49	17	-7	26	39	1.39	-0.68	1.50	6.9	7	4	7	20	s w
Year, 1898.—IV. SOUTH- ERN COUNTIES.....	48.3	+1.3	102	July 24	-16	Jan. 30 Feb. 2	54	2.78	+0.12	3.33	49.5	9	10	9	11	s w
January.....	26.6	+3.7	63	12	-16	30	39	3.20	+1.01	1.70	12.8	10	6	8	17	sw-nw
February.....	24.9	+0.6	59	10-11	-16	2	43	2.58	-0.53	1.40	16.7	12	4	8	16	s w
March.....	38.3	+7.0	78	17	0	1	44	3.75	+1.64	2.02	0.3	11	10	8	13	s w
April.....	44.2	-0.8	79	17	10	5	46	1.50	-0.94	1.16	0.5	8	11	9	10	ne
May.....	57.6	+0.9	88	23	25	6	46	2.35	-1.37	2.62	0	10	12	10	9	ne-s w
June.....	68.6	-0.7	96	5-24	38	1-20	54	3.17	-0.32	2.66	0	7	12	12	6	s w
July.....	72.4	+1.5	102	24	32	11	50	1.67	-1.13	1.40	0	6	17	10	4	s w
August.....	70.4	+2.2	101	23	40	28	47	2.30	-0.31	2.10	0	6	13	11	7	s w
September.....	65.0	+3.0	99	3	29	11	50	3.27	+0.42	2.92	0	8	14	9	7	s w
October.....	50.9	+1.6	93	3	20	26	40	4.45	+2.18	3.33	0.1	13	6	9	16	s w
November.....	35.1	-1.6	70	5	3	27	45	3.02	-0.07	2.30	9.3	9	8	7	15	s w
December.....	25.1	-3.5	54	18-29	-9	13	45	2.15	-0.15	1.53	9.8	10	5	8	18	s w

Table 76.—*Relative humidity, wind movement and atmospheric pressure in Michigan during the year 1898.*

Year and months, 1898.	Mean relative humid- ity (per cent.)	Wind movement (in miles.)			Atmospheric pressure reduced to 32° and sea level.					
		Average total move- ment.	Average hourly velocity.	Highest velocity with direction from and date	Mean.	Highest.	Date.	Lowest.	Date.	Absolute range.
Year, 1898..	79	7,218	10	56—w—Jan. 23	30.01	30.74	Dec. 31	29.05	Jan. 23	1.69
January.....	84	7,939	11	56—w—23	30.00	30.47	18	29.05	23	1.42
February.....	85	7,562	11	44—n w—15	30.08	30.50	19	29.52	15	0.98
March.....	80	7,765	10	46—w—13	30.09	30.46	6	29.42	13	1.04
April.....	70	7,272	10	50—s e—19	30.07	30.45	7	29.47	20	0.98
May.....	75	7,007	9	44—s w—11	29.93	30.34	4	29.45	19	0.89
June.....	76	6,224	8	52—w—12	29.96	30.37	15	29.26	25	1.11
July.....	72	5,902	8	52—s w—19	30.01	30.35	12	29.49	19	0.86
August.....	79	5,406	7	38—s—8	29.95	30.22	14	29.68	3-28	0.54
September.....	78	6,479	9	39—s e—24	29.98	30.61	10	29.42	3	1.19
October.....	83	8,134	11	44—s w—11	30.02	30.44	6	29.40	22	1.04
November.....	84	8,332	12	52—n—10	30.00	30.56	9	29.24	22	1.32
December.....	85	8,588	12	42—s w—26	29.98	30.74	31	29.32	26	1.42

TABLES
RELATING TO
DEATHS
AND
CAUSES OF DEATH
IN
MICHIGAN
DURING THE
YEAR 1898

PRIMARY TABLES RELATING TO DEATHS AND CAUSES OF DEATH IN MICHIGAN DURING THE YEAR 1898.

TABLE I.—Deaths in Michigan, by months, counties and sex, during the year 1898. (*Stillbirths included.*)

TABLE II.—Deaths in Michigan, by ages, counties and sex, during the year 1898. (*Stillbirths included.*)

TABLE III.—Causes of death in Michigan, by months, ages, and sex, during the year 1898. (*Stillbirths included.*)

TABLE IV.—Causes of death in Michigan, by counties, during the year 1898. (*Stillbirths included.*)

TABLE V.—Deaths in Michigan, by months, cities and sex, during the year 1898. (*Stillbirths included.*)

TABLE VI.—Deaths in Michigan, by ages, cities and sex, during the year 1898. (*Stillbirths included.*)

TABLE VII.—Causes of death in Michigan, by cities, during the year 1898. (*Stillbirths included.*)

NOTE.—*Secondary tables*, containing death rates and other ratios, and *comparative tables*, displaying the mortality of Michigan for the year 1898 in connection with previous years and other States and countries, may be found on preceding pages of this Report, together with the descriptive text.

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TABLE I.—Deaths in Michigan by months, counties and sex, during the year 1898.
(Stillbirths included.)

State and counties.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
STATE.....	Total.	29,474	2,385	2,336	2,757	2,751	2,545	2,119	2,262	2,510	2,685	2,489	2,258	2,377
	Males.	15,624	1,240	1,228	1,458	1,415	1,339	1,121	1,344	1,344	1,447	1,327	1,218	1,242
	Fem...	13,809	1,143	1,103	1,291	1,337	1,203	998	1,018	1,163	1,237	1,159	1,037	1,130
	Unk...	41	2	5	8	5	3		3	3	1	3	3	5
Alcona.....	Total.	40	5	2	3	4	2	4	4	5	2	4	4	1
	Males.	20	3	1	2	3	2	1	3	2	1	1	1	
	Fem...	20	2	1	1	1		3	1	3	1	3	3	1
Alger.....	Total.	42	2	1	9	2	5	3	3	4	3	4	6	
	Males.	24	1		7	1	3	2	1	1	1	4	3	
	Fem...	18	1	1	2	1	2	1	2	3	2		3	
Allegan.....	Total.	430	37	45	53	46	34	38	27	40	23	41	27	19
	Males.	232	18	23	37	24	16	20	11	25	11	19	16	12
	Fem...	198	19	22	16	22	18	18	16	15	12	22	11	7
Alpena.....	Total.	195	18	14	21	7	18	18	14	14	30	10	7	24
	Males.	89	7	4	6	4	9	7	6	7	18	2	5	14
	Fem...	106	11	10	15	3	9	11	8	7	12	8	2	10
Antrim.....	Total.	160	11	9	12	13	18	12	11	16	20	11	14	13
	Males.	83	7	3	7	3	9	9	7	8	10	5	8	7
	Fem...	77	4	6	5	10	9	3	4	8	10	6	6	6
Arenac.....	Total.	86	2	6	8	7	5	1	8	12	11	7	12	7
	Males.	47	1	3	5	3	2	1	4	7	5	3	8	5
	Fem...	39	1	3	3	4	3		4	5	6	4	4	2
Baraga.....	Total.	28	1	1	3	5	3		1	2	1	5	3	3
	Males.	15		1	3	2	1		1	1		5	1	
	Fem...	13	1			3	2			1	1		2	3
Barry.....	Total.	268	15	28	30	26	24	18	19	23	26	16	19	24
	Males.	140	9	15	17	15	12	8	10	13	13	7	8	13
	Fem...	127	6	13	12	11	12	10	9	10	13	9	11	11
	Unk...	1			1									
Bay.....	Total.	739	62	50	60	59	63	70	63	54	84	55	59	60
	Males.	378	34	27	31	27	37	40	36	29	36	26	28	27
	Fem...	360	28	23	28	32	26	30	27	25	48	29	31	33
	Unk...	1			1									
Benzie.....	Total.	96	9	5	13	7	7	12	6	12	9	4	5	7
	Males.	63	5	3	6	4	5	9	5	8	8	2	2	6
	Fem...	33	4	2	7	3	2	3	1	4	1	2	3	1
Berrien.....	Total.	574	38	53	59	52	46	44	48	44	44	45	48	53
	Males.	317	24	26	33	31	26	22	25	25	28	26	25	26
	Fem...	257	14	27	26	21	20	22	23	19	16	19	23	27
Branch.....	Total.	318	25	35	47	30	33	25	22	27	31	25	24	24
	Males.	190	15	20	22	16	15	15	14	14	16	15	13	15
	Fem...	158	10	15	25	14	18	10	8	13	15	10	11	9
Calhoun.....	Total.	660	58	58	78	70	41	45	50	41	50	55	51	63
	Males.	339	34	24	41	39	19	20	29	21	28	28	27	29
	Fem...	319	24	34	37	31	21	25	21	19	22	27	24	34
	Unk...	2				1				1				
Cass.....	Total.	273	29	23	25	20	23	20	23	26	17	19	25	23
	Males.	140	13	9	16	10	15	12	9	15	8	10	15	8
	Fem...	133	16	14	9	10	8	8	14	11	9	9	10	15
Charlevoix.....	Total.	147	15	16	11	14	13	8	8	12	18	11	12	9
	Males.	74	7	7	6	7	7	4	4	7	11	8	4	2
	Fem...	72	8	9	5	7	6	4	4	5	7	3	7	7
	Unk...	1										1		

TABLE I.—CONTINUED.—Deaths in Michigan, by months, counties and sex, 1898.

Counties.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Cheboygan.....	Total.	210	16	19	24	19	25	17	17	22	12	21	6	12
	Males.	107	10	8	12	9	14	8	10	11	5	12	2	6
	Fem.	103	6	11	12	10	11	9	7	11	7	9	4	6
Chippewa.....	Total.	204	17	7	8	19	13	16	21	20	29	22	17	15
	Males.	111	9	3	5	12	6	5	10	12	21	17	6	5
	Fem.	93	8	4	3	7	7	11	11	8	8	5	11	10
Clare.....	Total.	62	3	4	5	9	4	5	4	3	10	9	2	4
	Males.	30	3	2	4	3	1	2	2	3	4	5	1	1
	Fem.	32	—	2	1	6	3	3	2	—	6	4	2	3
Clinton.....	Total.	280	21	25	25	33	29	16	19	19	24	21	23	25
	Males.	149	10	16	8	14	18	5	11	12	16	12	11	16
	Fem.	131	11	9	17	19	11	11	8	7	8	9	12	9
Crawford.....	Total.	26	1	3	1	4	3	1	1	3	3	3	2	1
	Males.	18	1	—	1	4	3	—	1	2	2	2	1	1
	Fem.	8	—	3	—	—	—	1	—	1	1	1	—	—
Delta.....	Total.	273	12	13	26	27	29	24	22	22	21	28	22	27
	Males.	169	7	8	18	17	14	14	14	16	18	14	14	15
	Fem.	103	5	5	7	10	15	10	8	6	3	14	8	12
	Unk.	1	—	—	1	—	—	—	—	—	—	—	—	—
Dickinson.....	Total.	206	13	15	14	17	17	18	16	15	15	19	24	33
	Males.	120	9	9	10	9	9	10	8	12	7	10	13	14
	Fem.	86	4	6	4	8	8	8	8	3	8	9	11	9
Eaton.....	Total.	363	37	30	34	25	33	32	26	22	35	29	25	35
	Males.	196	16	20	16	13	12	17	11	12	20	16	18	25
	Fem.	167	21	10	18	12	21	15	15	10	15	13	7	10
Emmet.....	Total.	171	17	6	22	11	18	5	23	23	15	11	9	11
	Males.	98	9	2	12	7	13	3	15	11	7	7	5	7
	Fem.	73	8	4	10	4	5	2	8	12	8	4	4	4
Genesee.....	Total.	504	41	46	43	55	48	38	31	42	49	34	34	43
	Males.	273	18	35	23	24	27	23	15	18	24	20	22	24
	Fem.	230	23	11	20	31	20	15	16	24	25	14	12	19
	Unk.	1	—	—	—	—	1	—	—	—	—	—	—	—
Gladwin.....	Total.	48	5	2	2	5	3	3	5	9	4	—	3	7
	Males.	22	1	1	—	4	2	2	1	3	1	—	2	5
	Fem.	26	4	1	2	1	1	1	4	6	3	—	1	2
Gogebic.....	Total.	206	17	12	25	22	17	12	18	23	14	17	12	17
	Males.	116	7	10	16	10	8	9	9	15	8	6	5	13
	Fem.	89	10	2	9	11	9	3	9	8	6	11	7	4
	Unk.	1	—	—	—	1	—	—	—	—	—	—	—	—
Gd. Traverse..	Total.	236	14	22	21	20	16	25	16	18	17	21	20	26
	Males.	128	8	11	9	9	6	14	6	11	9	12	15	18
	Fem.	107	6	10	12	11	10	11	10	7	8	9	5	8
	Unk.	1	—	1	—	—	—	—	—	—	—	—	—	—
Gratiot.....	Total.	353	30	31	31	27	27	25	21	31	29	43	25	33
	Males.	167	17	12	11	9	12	15	9	12	13	26	13	18
	Fem.	185	13	19	20	17	15	10	12	19	16	17	12	15
	Unk.	1	—	—	—	1	—	—	—	—	—	—	—	—
Hillsdale.....	Total.	384	37	25	30	38	40	24	26	33	32	39	31	29
	Males.	189	16	10	12	23	23	9	8	15	19	20	19	15
	Fem.	195	21	15	18	15	17	15	18	18	13	19	12	14
Houghton.....	Total.	728	50	41	47	47	66	59	72	73	102	65	46	60
	Males.	421	27	22	28	21	41	32	45	48	58	38	31	36
	Fem.	304	22	18	19	26	24	27	27	25	44	27	15	30
	Unk.	3	1	1	—	—	1	—	—	—	—	—	—	—
Huron.....	Total.	353	34	25	33	35	30	24	21	28	39	37	25	22
	Males.	179	21	10	14	16	15	13	9	15	16	26	11	13
	Fem.	170	13	13	19	19	15	11	11	13	23	10	14	9
	Unk.	4	—	2	—	—	—	—	1	—	—	1	—	—

TABLE I.—CONTINUED.—Deaths in Michigan, by months, counties and sex, 1898.

Counties.	Sex.	Year 18 8.	Months, 1898											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Manistée.....	Total.	308	34	29	19	33	21	14	16	27	26	34	29	26
	Males.	174	17	12	9	20	14	6	12	17	18	18	16	15
	Fem.	134	17	17	10	13	7	8	4	10	8	16	13	11
Marquette.....	Total.	469	33	53	49	41	38	36	19	34	39	47	37	43
	Males.	276	22	37	28	21	19	18	9	24	30	21	19	28
	Fem.	192	11	16	20	20	19	18	10	10	9	26	18	15
	Unk.	1			1									
Mason.....	Total.	242	19	24	22	26	16	20	10	22	26	18	16	23
	Males.	140	7	11	12	15	10	11	6	11	19	13	8	17
	Fem.	102	12	13	10	11	6	9	4	11	7	5	8	6
Mecosta.....	Total.	244	22	21	30	29	24	16	15	16	22	17	11	21
	Males.	139	10	11	19	16	16	9	8	11	13	11	7	8
	Fem.	104	12	10	11	12	8	7	7	5	9	6	4	13
Menominee.....	Total.	261	18	21	15	29	14	18	16	32	27	18	25	18
	Males.	147	10	16	8	15	5	13	8	18	17	9	15	13
	Fem.	112	8	5	7	14	9	5	8	14	10	9	9	14
Midland.....	Total.	156	8	11	13	12	11	15	11	14	16	15	12	18
	Males.	91	4	3	9	7	3	8	7	8	9	12	8	13
	Fem.	65	4	8	4	5	8	7	4	6	7	3	4	5
Missaukee.....	Total.	61	5		3	8	3	5	5	12	9	6	2	3
	Males.	38	2		2	6	3	4	3	8	5	4		1
	Fem.	23	3		1	2		1	2	4	4	2	2	2
Monroe.....	Total.	417	34	29	39	39	37	26	33	32	41	42	38	27
	Males.	226	21	20	22	18	18	17	17	16	20	19	21	17
	Fem.	191	13	9	17	21	19	9	16	16	21	23	17	10
Montcalm.....	Total.	417	34	41	45	41	30	54	21	28	38	43	22	40
	Males.	212	17	21	25	15	12	18	9	19	18	24	13	21
	Fem.	204	17	20	20	25	18	16	12	9	20	19	9	19
Montmorency.....	Total.	20	1	2		1		13		1			1	1
	Males.	10	1			1		6					1	
	Fem.	10		1				7		1				1
Muskegon.....	Total.	435	37	26	38	55	36	27	31	40	43	39	28	35
	Males.	236	21	11	25	29	20	17	17	23	19	22	15	17
	Fem.	198	16	15	13	26	16	10	14	17	24	17	13	17
Newaygo.....	Total.	189	17	18	23	6	13	18	15	6	22	14	23	14
	Males.	92	9	10	13	1	8	7	8	3	9	8	10	6
	Fem.	96	8	8	10	5	5	11	7	3	13	6	12	8
Oakland.....	Total.	625	59	53	46	54	48	41	35	68	59	53	59	50
	Males.	333	38	26	25	35	22	19	21	37	28	23	32	27
	Fem.	292	21	27	21	19	26	22	14	31	31	30	27	23
Oceana.....	Total.	251	25	14	27	32	32	16	18	14	27	25	12	9
	Males.	137	12	7	12	14	19	9	12	7	17	15	8	5
	Fem.	113	13	7	15	18	13	7	5	7	10	10	4	4
Ogemaw.....	Total.	57	3	6	6	3	5	4	7	4	5	7	4	3
	Males.	32	1	5	3	2	3	2	2	3	4	4	1	2
	Fem.	25	2	1	3	1	2	2	5	1	1	3	3	1
Ontonagon.....	Total.	18		1	1	2	2	1	2	1	5	1	1	1
	Males.	11		1	1					1	4	1	1	1
	Fem.	7				2	2		2		1			
Osceola.....	Total.	182	15	13	26	17	9	15	9	11	13	11	25	18
	Males.	85	6	9	11	8	3	6	4	4	8	7	13	6
	Fem.	97	9	4	15	9	6	9	5	7	5	4	12	12

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TABLE I.—CONCLUDED.—Deaths in Michigan, by months, counties and sex, 1898.

Counties.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Oscoda.....	{ Total.	2	1								1			
	{ Males.	2	1								1			
	{ Fem...													
Otsego.....	{ Total.	62	6	2	3	5	1	4	11	9	7	5	4	5
	{ Males.	39	3		2	3	1	4	10	5	3	4	1	3
	{ Fem...	22	3	2	1	2			1	3	4	1	3	2
	{ Unk...	1								1				
Ottawa.....	{ Total.	480	49	37	42	36	35	34	42	38	47	51	41	28
	{ Males.	252	23	23	23	20	18	16	23	21	23	25	21	16
	{ Fem...	227	26	14	19	15	17	18	19	17	24	26	20	12
	{ Unk...	1				1								
Presque Isle..	{ Total.	45	1	4	1	6	5	5	4	5	3	3	4	4
	{ Males.	26	1	3	1	6	5	2	2	2	1		2	1
	{ Fem...	19		1				3	2	3	2	3	2	3
Roscommon...	{ Total.	5	1						3		1			
	{ Males.	3	1						2					
	{ Fem...	2							1		1			
Saginaw.....	{ Total.	899	71	75	96	76	85	70	60	82	90	66	50	78
	{ Males.	492	40	41	51	39	46	34	35	42	59	35	26	44
	{ Fem...	407	31	34	45	37	39	36	25	40	31	31	24	34
Sanilac.....	{ Total.	396	30	37	50	28	30	17	32	30	56	31	28	27
	{ Males.	188	17	20	22	10	12	10	13	14	27	14	12	17
	{ Fem...	206	13	17	28	18	18	7	18	16	29	16	16	10
	{ Unk...	2							1			1		
Schoolcraft..	{ Total.	76	6	6	10	4	13	5	6	7	3	5	6	5
	{ Males.	45	5	5	4	3	5	4	3	7	1	2	4	2
	{ Fem...	31	1	1	6	1	8	1	3		2	3	2	3
Shiawassee...	{ Total.	410	39	46	38	31	35	27	22	23	32	37	41	39
	{ Males.	223	17	29	21	14	23	16	14	12	18	20	19	20
	{ Fem...	187	22	17	17	17	12	11	8	11	14	17	22	19
St. Clair.....	{ Total.	709	56	60	70	70	74	36	61	70	63	53	54	42
	{ Males.	388	24	33	38	44	49	15	40	37	36	21	26	25
	{ Fem...	321	32	27	32	26	25	21	21	33	27	32	28	17
St. Joseph....	{ Total.	292	29	17	43	31	23	19	30	19	15	17	21	28
	{ Males.	168	13	12	22	19	10	12	20	11	12	10	9	18
	{ Fem...	124	16	5	21	12	13	7	10	8	3	7	12	10
Tuscola.....	{ Total.	369	33	37	26	40	27	31	20	30	34	25	39	27
	{ Males.	213	20	21	17	23	14	16	10	20	22	15	21	14
	{ Fem...	155	13	15	9	17	13	15	10	10	12	10	18	13
	{ Unk...	1		1										
Van Buren...	{ Total.	421	31	48	39	48	33	26	34	31	31	38	28	34
	{ Males.	225	16	25	21	24	21	13	20	16	18	22	15	14
	{ Fem...	195	15	23	17	24	12	13	14	15	13	16	13	20
	{ Unk...	1			1									
Washtenaw..	{ Total.	585	52	51	60	69	56	34	37	46	48	39	39	54
	{ Males.	306	25	28	32	33	29	17	17	28	27	24	25	21
	{ Fem...	279	27	23	28	36	27	17	20	18	21	15	14	33
Wayne.....	{ Total.	5,269	390	367	450	506	469	373	512	518	439	444	387	414
	{ Males.	2,762	203	190	240	268	229	213	282	250	229	240	214	204
	{ Fem...	2,504	186	177	209	238	240	160	230	268	210	204	173	209
	{ Unk...	3			1									1
Wexford.....	{ Total.	147	13	5	9	14	10	12	10	13	20	16	11	14
	{ Males.	73	7	4	5	7	3	7	6	7	10	3	6	8
	{ Fem...	73	6	1	3	7	7	5	4	6	10	13	5	6
	{ Unk...	1			1									

TABLE II.—Deaths in Michigan by ages, counties

State and counties.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 Year,†	1.	2.	3.	4.
STATE.....	Total.....	29,474	1,300	5,496	1,065	452	317	218
	Males.....	15,624	728	3,037	584	245	159	113
	Fem.....	13,809	536	2,456	481	207	158	105
	Unk.....	41	36	3	—	—	—	—
Alcona.....	Total.....	40	1	7	—	—	—	1
	Males.....	20	1	5	—	—	—	1
	Fem.....	20	—	2	—	—	—	—
Alger.....	Total.....	42	3	11	5	1	1	1
	Males.....	24	2	5	3	—	1	1
	Fem.....	18	1	6	2	1	—	—
Allegan.....	Total.....	430	9	48	14	7	2	2
	Males.....	232	5	27	9	4	1	1
	Fem.....	198	4	21	5	3	1	1
Alpena.....	Total.....	195	8	42	15	3	3	3
	Males.....	89	2	22	6	2	1	2
	Fem.....	106	6	20	9	1	2	1
Antrim.....	Total.....	160	7	45	11	4	1	1
	Males.....	83	3	23	7	3	—	1
	Fem.....	77	4	22	4	1	1	—
Arenac.....	Total.....	86	7	13	5	4	2	1
	Males.....	47	4	6	4	1	1	1
	Fem.....	39	3	7	1	3	1	—
Baraga.....	Total.....	28	—	7	—	1	1	—
	Males.....	15	—	3	—	1	1	—
	Fem.....	13	—	4	—	—	—	—
Barry.....	Total.....	268	5	28	2	3	3	—
	Males.....	140	3	19	2	1	—	—
	Fem.....	127	1	9	—	2	3	—
	Unk.....	1	1	—	—	—	—	—
Bay.....	Total.....	739	45	178	55	15	10	8
	Males.....	378	30	97	28	8	6	7
	Fem.....	360	14	81	27	7	4	1
	Unk.....	1	1	—	—	—	—	—
Benzie.....	Total.....	96	2	16	7	3	1	—
	Males.....	63	—	10	6	2	1	—
	Fem.....	33	2	6	1	1	—	—
Berrien.....	Total.....	574	13	92	21	9	8	4
	Males.....	317	10	53	15	8	3	3
	Fem.....	257	3	39	6	1	5	1
Branch.....	Total.....	348	10	31	8	1	1	2
	Males.....	190	6	20	5	—	1	1
	Fem.....	158	4	11	3	1	—	1
Calhoun.....	Total.....	660	12	56	17	4	2	—
	Males.....	339	5	34	8	2	1	—
	Fem.....	319	5	22	9	2	1	—
	Unk.....	2	2	—	—	—	—	—
Cass.....	Total.....	273	6	28	11	2	4	2
	Males.....	140	4	13	5	2	2	1
	Fem.....	133	2	15	6	—	2	1
Charlevoix.....	Total.....	147	7	31	9	5	2	1
	Males.....	74	3	13	6	3	1	1
	Fem.....	72	3	18	3	2	1	—
	Unk.....	1	1	—	—	—	—	—

* Stillbirths included.

† Stillbirths not included.

DEATHS

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and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
7,548	733	552	916	1,203	1,089	972	1,062	1,030	973	1,170	1,317	1,475	1,832	1,987	1,874	2,394	47
4,138	387	293	437	582	508	419	508	530	535	621	705	780	1,016	1,086	1,056	1,262	33
3,407	346	259	479	621	581	553	554	500	438	549	612	695	816	901	818	1,132	12
3																	2
8	1	1	2	1	3	---	2	3	3	2	2	4	3	2	2	---	---
6	1			1	2	---	---	---	2	1	2	2		2	---	---	---
2		1	2		1	---	2	3	1	1		2	3		2	---	---
19	2		3	5	---	1	1	2	2		2	1				1	---
10				5	---	1	1	2	1			1				1	---
9	2		3					1	1		2						---
73	9	12	13	12	17	13	13	10	9	23	25	38	32	43	29	50	---
42	4	3	7	6	7	4	5	7	4	12	12	21	22	23	19	29	---
31	5	9	6	6	10	9	8	3	5	11	13	17	10	20	10	21	---
66	11	8	7	10	4	12	9	5	7	7	8	5	6	4	7	11	---
33	6	3	3	5	2	3	1	3	4	6	2	2	2	3	5	4	---
33	5	5	4	5	2	9	8	2	3	1	6	3	4	1	2	7	---
62	2	4	9	10	4	9	3	4	4	5	6	2	7	9	9	4	---
34	1	3	3	6	1	4	2	2	1	3	3	1	3	6	5	4	---
28	1	1	6	4	3	5	1	2	3	2	3	1	4	3	4	2	---
25	4	4	2	5	3	1	4	2		3	6	4	7	2	3	3	1
13	1	2	2	2	3	1	2	2		1	4	3	3	1	3	2	1
12	3	2		3	2	1	2			2	2	1	4	1	1	1	---
9	2		1	3	2	1	2		1		3	1	1	1		1	---
4			1	3	1	1	1		1		3	1		1			---
36	2	1	5	9	5	6	7	11	7	10	19	16	31	35	27	36	---
22	2		3	3	1	1	2	2	3	2	11	8	12	20	20	25	---
14		1	2	6	4	5	5	9	4	8	8	8	19	15	7	11	---
266	20	17	27	31	30	23	20	23	25	25	31	24	37	32	25	38	---
146	13	11	13	14	14	4	12	11	13	14	15	11	20	15	9	16	---
120	7	6	16	18	16	19	8	12	12	11	16	13	17	17	16	22	---
27	2	4	1	6	5	6	7	3	3	2	5	4	6	1	6	5	1
19	2			3	4	5	3	1	1	1	3	3	3	1	4	5	1
8			1	3	1	1	4	2	2	1	2	1	3		2		---
134	16	13	22	25	26	13	17	14	20	22	34	43	39	42	41	38	2
82	9	4	10	14	13	5	6	7	11	11	19	22	22	22	25	23	2
52	7	9	12	11	13	8	11	7	9	11	15	21	17	20	16	15	---
43	5	4	8	11	16	8	6	11	18	16	19	27	27	33	26	60	---
27	3	4	6	5	4	6	3	4	7	9	8	12	17	20	16	33	---
16	2		2	6	12	2	3	7	11	7	11	15	10	13	10	27	---
79	7	11	19	28	26	19	28	29	32	35	34	39	52	63	66	79	2
45	6	4	7	15	15	5	12	15	19	15	21	25	24	34	33	38	1
34	1	7	12	13	11	14	16	14	13	20	13	14	28	29	33	41	1
47	4	4	11	14	14	7	8	4	11	10	12	10	22	31	22	34	2
23	1	3	7	3	4	3	6	2	7	3	4	8	14	17	13	16	2
24	3	1	4	11	10	4	2	2	4	7	8	2	8	14	9	18	---
48	3	5	3	3	5	7	4	6	1	7	6	9	9	7	4	13	---
24	1	3	2	2	1	1	1	2		4	3	5	5	5	4	8	---
24	2	2	1	1	4	6	1	4	1	3	3	4	4	2	5	5	---

† Stillbirths not included.

TABLE II.—CONTINUED.—Deaths in Michigan by ages,

Counties.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Cheboygan	Total	210	18	61	25	3	5	1
	Males	107	11	32	11	2	4	1
	Fem.	103	7	29	14	1	1	—
Chippewa	Total	204	9	74	12	7	1	1
	Males	111	3	43	4	3	—	1
	Fem.	93	6	31	8	4	1	—
Clare	Total	62	—	14	—	—	2	—
	Males	30	—	7	—	—	—	—
	Fem.	32	—	7	—	—	2	—
Clinton	Total	280	1	33	4	2	5	1
	Males	149	1	17	3	—	3	1
	Fem.	131	—	16	1	2	2	—
Crawford	Total	26	—	9	—	—	—	1
	Males	18	—	7	—	—	—	—
	Fem.	8	—	2	—	—	—	1
Delta	Total	273	15	74	21	7	5	2
	Males	169	10	40	12	6	4	—
	Fem.	103	4	34	9	1	1	2
	Unk.	1	1	—	—	—	—	—
Dickinson	Total	206	11	80	12	3	4	3
	Males	120	5	40	7	1	3	—
	Fem.	86	6	40	5	2	1	3
Eaton	Total	363	2	34	7	3	4	1
	Males	196	1	25	2	—	2	1
	Fem.	167	1	9	5	3	2	—
Emmet	Total	171	9	29	10	3	3	2
	Males	98	6	18	6	2	3	2
	Fem.	73	3	11	4	1	—	—
Genesee	Total	504	11	63	9	4	5	2
	Males	273	5	35	7	2	2	1
	Fem.	230	5	28	2	2	3	1
	Unk.	1	1	—	—	—	—	—
Gladwin	Total	48	2	10	4	—	1	—
	Males	22	1	3	2	—	—	—
	Fem.	26	1	7	2	—	1	—
Gogebic	Total	206	14	69	17	10	7	4
	Males	116	8	38	9	2	2	1
	Fem.	89	5	31	8	8	5	3
	Unk.	1	1	—	—	—	—	—
Grand Traverse	Total	236	9	37	6	5	1	1
	Males	128	4	18	1	5	1	1
	Fem.	107	4	19	5	—	—	—
	Unk.	1	1	—	—	—	—	—
Gratiot	Total	353	9	44	15	6	2	4
	Males	167	3	26	4	2	1	2
	Fem.	185	5	18	11	4	1	2
	Unk.	1	1	—	—	—	—	—
Hillsdale	Total	384	6	28	9	3	—	1
	Males	189	3	17	6	1	—	1
	Fem.	195	3	11	3	2	—	—
Houghton	Total	728	20	264	45	19	13	5
	Males	421	11	140	30	13	7	2
	Fem.	304	7	123	15	6	6	3
	Unk.	3	2	1	—	—	—	—
Huron	Total	353	12	74	10	7	7	1
	Males	179	6	40	4	4	3	—
	Fem.	170	2	34	6	3	4	1
	Unk.	4	4	—	—	—	—	—

* Stillbirths included.

† Stillbirths not included.

DEATHS

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counties and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
95	8	8	8	6	4	3	6	3	6	5	2	5	5	7	11	10	-----
50	3	3	3	3	3	1	1	2	5	3	1	4	3	2	8	4	-----
45	5	5	5	3	3	3	5	1	1	2	1	1	2	5	3	6	-----
95	2	2	4	15	13	8	6	7	7	7	7	5	3	5	1	8	-----
51	2	2	4	11	8	4	3	6	4	5	3	4	1	3	3	3	-----
44	-----	2	4	4	5	4	3	1	3	2	4	1	2	2	1	5	-----
16	1	1	5	3	1	4	4	2	3	2	4	3	4	1	4	4	-----
7	1	1	5	1	1	1	2	1	1	1	2	2	2	1	3	2	-----
9	1	-----	2	2	-----	3	2	2	2	1	2	1	4	-----	1	2	-----
45	9	2	5	11	8	7	6	13	11	8	12	20	33	26	26	37	-----
24	5	1	1	6	4	4	3	7	4	2	7	10	19	14	15	22	-----
21	4	1	4	5	4	3	3	6	7	6	5	10	14	12	11	15	-----
10	1	1	-----	1	-----	2	3	1	1	2	-----	-----	-----	2	2	-----	-----
7	1	1	-----	1	-----	2	2	1	1	1	-----	-----	-----	2	2	-----	-----
3	1	-----	-----	-----	-----	2	1	-----	-----	1	-----	-----	-----	-----	-----	-----	-----
109	11	8	4	13	11	11	9	8	16	11	9	4	8	7	8	5	2
62	6	5	4	8	7	6	6	7	11	8	5	3	6	6	4	3	2
47	5	3	-----	5	4	5	3	1	5	3	4	1	2	1	4	6	-----
102	5	6	4	5	11	12	11	7	10	6	-----	5	4	2	3	2	-----
51	2	4	2	3	10	7	8	4	7	4	-----	5	4	2	2	-----	-----
51	3	2	2	2	1	5	3	3	3	2	-----	-----	-----	1	2	-----	-----
49	6	-----	7	15	12	8	8	11	22	15	17	17	37	40	48	48	1
30	4	-----	4	10	6	4	2	5	12	8	5	11	18	28	26	26	1
19	2	-----	3	10	6	4	6	6	10	7	12	6	19	12	22	22	-----
47	5	6	3	9	2	5	8	6	6	10	6	8	11	5	10	15	-----
31	5	2	2	6	1	1	4	4	3	5	2	5	8	2	3	8	-----
16	-----	4	1	3	1	4	4	2	3	5	4	3	3	3	7	7	-----
83	9	6	19	14	14	12	19	12	21	19	20	31	45	50	54	65	-----
47	7	3	8	3	8	6	7	7	12	12	11	14	30	27	29	32	-----
36	2	3	11	11	6	6	7	5	9	7	9	17	15	23	25	33	-----
15	1	1	3	1	2	-----	3	2	2	-----	3	2	2	2	4	3	-----
5	-----	1	2	1	-----	-----	1	-----	1	-----	2	-----	2	2	3	1	-----
10	1	1	-----	2	2	-----	2	2	1	-----	1	2	-----	-----	1	2	-----
107	9	6	3	10	14	11	12	4	6	1	1	4	2	1	-----	1	-----
52	5	3	-----	8	8	8	9	2	4	1	1	3	2	1	-----	1	-----
55	4	3	3	2	6	3	3	2	2	-----	-----	1	-----	-----	-----	-----	-----
50	6	4	5	9	9	7	16	10	7	15	10	13	24	17	12	12	1
26	4	2	2	7	4	4	5	7	3	9	7	10	10	11	5	7	1
24	2	2	3	2	5	3	11	3	4	6	3	3	10	6	7	5	-----
71	6	13	14	17	16	7	14	12	8	22	25	17	21	22	27	32	-----
35	3	7	6	8	4	1	8	4	6	9	11	7	15	11	15	14	-----
36	3	6	8	9	12	6	6	8	2	13	14	10	6	11	12	18	-----
41	3	4	3	12	13	15	11	13	11	13	23	24	41	40	48	59	4
25	2	3	1	6	9	4	2	4	5	7	12	10	24	16	27	27	2
16	1	1	2	6	4	11	9	9	6	6	11	14	17	24	21	32	-----
346	21	11	22	39	22	20	33	26	18	24	15	28	20	20	15	19	-----
192	14	8	11	20	14	17	21	13	10	17	11	21	13	9	9	10	-----
153	7	3	11	19	8	12	12	13	8	7	4	7	7	11	6	9	-----
1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
99	7	7	16	15	12	14	12	11	13	10	21	11	26	18	22	27	-----
51	3	3	8	6	4	6	3	5	5	6	8	6	16	14	14	15	-----
48	4	4	8	9	8	3	9	6	8	4	13	5	10	4	8	12	-----

† Stillbirths not included.

TABLE II.—CONTINUED.—Deaths in Michigan by ages,

Counties.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Ingham	Total	442	10	59	4	3	3	1
	Males	221	3	26	2	2	2	
	Fem.	220	6	33	2	1	1	1
	Unk.	1	1					
Ionia	Total	433	7	56	7	4	3	1
	Males	203	5	23	4	1	3	
	Fem.	230	2	33	3	3		1
Iosco	Total	117	6	37	7	1	1	1
	Males	66	4	27	4			1
	Fem.	51	2	10	3	1	1	
Iron	Total	34		7	4			2
	Males	22		5	2			2
	Fem.	12		2	2			
Isabella	Total	201	2	34	14	8	3	2
	Males	105	1	24	6	6	2	
	Fem.	96	1	10	8	2	1	2
Jackson	Total	625	20	92	15	4	3	
	Males	326	12	56	10	2	2	
	Fem.	299	8	36	5	2	1	
Kalamazoo	Total	679	20	71	11	5	8	8
	Males	367	13	41	7	2	4	7
	Fem.	312	7	30	4	3	4	1
Kalkaska	Total	58		14	2	3	1	1
	Males	29		6	1	3		
	Fem.	29		8	1		1	1
Kent	Total	1,672	123	295	48	21	17	10
	Males	861	62	162	26	10	8	3
	Fem.	807	58	132	22	11	9	7
	Unk.	4	3	1				
Keweenaw	Total	30	1	7		1		
	Males	16	1	2				
	Fem.	14		5		1		
Lake	Total	49	1	12	2	1	1	
	Males	30	1	8		1	1	
	Fem.	19		4	2			
Lapeer	Total	343	6	43	7	2	3	1
	Males	166	4	25	6	1	2	1
	Fem.	176	1	18	1	1	1	
	Unk.	1	1					
Leelanau	Total	128	10	22	6	4	5	2
	Males	65	6	9	3		1	
	Fem.	63	4	13	3	4	4	2
Lenawee	Total	643	9	81	12	6	4	4
	Males	310	4	41	7	5	2	1
	Fem.	333	5	40	5	1	2	3
Livingston	Total	253	4	23	2	4	2	1
	Males	124	2	14	1	3	1	1
	Fem.	129	2	9	1	1	1	
Luce	Total	15		3				
	Males	8		2				
	Fem.	7		1				
Mackinac	Total	75	4	12	4	3	1	2
	Males	44	2	5	2	1		1
	Fem.	31	2	7	2	2	1	1

* Stillbirths included.

† Stillbirths not included.

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counties and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
70	12	8	14	16	16	13	13	11	19	14	19	37	36	43	38	52	1
32	7	4	6	10	9	3	4	3	13	7	13	20	14	22	19	32	
38	5	4	8	6	7	10	9	8	6	7	6	17	22	21	19	20	1
71	9	6	20	22	14	10	13	15	18	14	24	32	30	35	39	53	1
31	5	2	4	8	3	3	10	7	8	5	10	17	18	17	18	27	1
40	4	4	16	14	7	7	3	8	10	9	14	15	12	18	21	26	
47	1	1	4	1	6	7	5	6	4	3	5	-----	1	4	6	8	2
32	1	1	-----	-----	3	2	1	4	2	3	2	-----	-----	2	2	5	1
15	-----	-----	3	1	3	5	4	2	2	-----	3	-----	1	2	4	3	1
13	2	2	-----	1	1	3	3	1	5	-----	1	-----	-----	1	1	-----	
9	1	1	-----	1	1	-----	-----	1	3	-----	-----	-----	-----	-----	1	-----	
4	1	2	-----	-----	-----	1	-----	-----	2	-----	1	-----	-----	1	-----	-----	
61	4	3	9	5	6	6	9	13	5	8	12	10	10	11	13	14	-----
38	3	1	3	1	2	2	3	7	1	5	4	5	7	7	8	7	-----
23	1	2	6	4	4	4	6	6	4	3	8	5	3	4	5	7	-----
114	12	9	19	19	23	19	25	26	23	28	22	34	51	63	41	77	-----
70	6	4	10	11	10	7	16	13	11	13	11	17	23	33	24	35	-----
44	6	5	9	8	13	12	9	13	12	15	11	17	28	30	17	42	-----
103	6	9	17	28	27	26	28	36	39	29	41	34	57	46	59	72	2
61	4	6	8	14	7	12	12	18	20	13	25	18	32	27	40	36	1
42	2	3	9	14	20	14	16	18	19	16	16	16	25	19	19	36	1
21	2	2	2	1	1	2	2	3	1	2	-----	5	4	2	1	6	-----
10	2	-----	-----	-----	1	1	-----	2	1	3	-----	3	2	3	1	2	-----
11	-----	2	1	1	-----	1	2	1	1	1	-----	2	2	-----	-----	4	-----
391	31	35	48	68	66	47	53	53	56	66	69	88	122	119	105	130	2
209	14	17	20	25	31	22	23	28	27	33	43	34	71	66	62	72	2
181	17	18	28	43	35	25	30	25	29	33	26	54	51	53	43	58	2
1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
8	2	-----	5	1	1	2	-----	-----	-----	1	1	2	1	2	2	1	-----
2	2	-----	4	-----	1	-----	-----	-----	-----	1	-----	2	-----	-----	1	1	-----
6	-----	1	1	1	-----	2	-----	-----	-----	-----	1	-----	-----	2	-----	-----	-----
16	-----	1	2	4	3	1	3	-----	1	3	3	2	2	3	2	2	-----
10	-----	1	1	1	-----	1	3	-----	1	3	2	1	1	2	1	1	-----
6	-----	1	3	3	3	-----	-----	-----	-----	-----	1	1	1	1	1	1	-----
56	10	7	11	18	8	8	9	13	12	14	13	24	28	34	33	38	1
35	3	5	4	8	3	4	3	5	7	5	6	9	15	17	19	14	-----
21	7	2	7	10	5	4	6	8	5	9	7	15	13	17	14	24	1
39	7	5	6	7	6	5	4	4	2	-----	6	2	8	1	11	5	-----
13	3	3	4	4	3	2	2	2	2	-----	4	1	3	-----	9	4	-----
26	4	2	2	3	3	3	2	2	-----	-----	2	1	5	1	2	1	-----
107	11	7	10	18	18	17	20	20	25	22	35	45	52	72	60	95	-----
56	2	3	7	9	6	5	9	8	11	6	18	18	25	41	28	54	-----
51	9	4	3	9	12	12	11	12	14	16	17	27	27	31	32	41	-----
32	3	3	7	10	15	7	7	15	5	7	15	15	23	27	21	37	-----
20	2	2	3	6	6	1	6	9	1	5	4	4	11	11	11	20	-----
12	1	1	4	4	9	6	1	6	4	2	11	11	12	16	10	17	-----
3	-----	-----	1	-----	-----	3	1	1	1	-----	-----	1	1	1	1	-----	1
2	-----	-----	1	-----	-----	2	1	1	1	-----	-----	1	1	1	1	-----	1
1	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
22	1	1	5	6	6	2	2	4	2	4	2	2	-----	-----	6	4	2
9	-----	1	4	4	2	1	2	4	1	3	1	1	-----	-----	5	2	2
13	1	-----	2	4	4	1	-----	-----	1	1	1	1	-----	-----	-----	-----	-----

† Stillbirths not included.

TABLE II.—CONTINUED.—Deaths in Michigan by ages,

Counties.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Macomb	Total.....	465	9	77	26	3	8	6
	Males.....	233	4	39	14	2	2	3
	Fem.....	232	5	38	12	1	6	3
Manistee.....	Total.....	308	20	106	11	7	10	2
	Males.....	174	14	63	6	3	5	1
	Fem.....	134	6	43	5	4	5	1
Marquette.....	Total.....	469	41	116	16	10	12	7
	Males.....	276	26	73	9	4	7	4
	Fem.....	192	14	43	7	6	5	3
Mason.....	Total.....	242	8	40	11	7	7	5
	Males.....	140	5	23	3	3	5	2
	Fem.....	102	3	17	8	4	2	3
Mecosta.....	Total.....	244	12	42	3	9	4	2
	Males.....	139	5	22	1	6	3	1
	Fem.....	104	6	20	2	3	1	1
Menominee.....	Total.....	261	27	90	15	2	1	5
	Males.....	147	15	52	7	2	1	3
	Fem.....	112	10	38	8			2
Midland.....	Total.....	156	4	36	12	1	3	2
	Males.....	91	3	23	9	1	1	2
	Fem.....	65	1	13	3		2	
Missaukee.....	Total.....	61	4	15	3	1		
	Males.....	38	2	6	3			
	Fem.....	23	2	9		1		
Monroe.....	Total.....	417	7	62	11	4	3	5
	Males.....	226	4	35	5	3	3	2
	Fem.....	191	3	27	6	1		3
Montcalm.....	Total.....	417	10	62	9	9	2	2
	Males.....	212	7	25	6	3	1	2
	Fem.....	204	2	37	3	6	1	
Montmorency.....	Total.....	20	1	2	1	2		
	Males.....	10		1		1		
	Fem.....	10	1	1	1	1		
Muskegon.....	Total.....	435	20	72	11	5	3	5
	Males.....	236	13	46	6	4	1	1
	Fem.....	198	6	26	5	1	2	4
Newaygo.....	Total.....	189	5	28	11	3		1
	Males.....	92	2	11	9	1		
	Fem.....	96	3	17	2	2		1
Oakland.....	Total.....	625	10	60	16	3	5	5
	Males.....	333	5	36	13	3	2	3
	Fem.....	292	5	24	3		3	2
Oceana.....	Total.....	251	6	44	14	4	2	4
	Males.....	137	4	30	7	3	2	4
	Fem.....	113	1	14	7	1		
Ogemaw.....	Total.....	57	3	15	2	1	1	
	Males.....	32	2	8	1	1		
	Fem.....	25	1	7	1		1	

* Stillbirths included.

† Stillbirths not included.

DEATHS

15

counties and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
120	15	8	12	19	23	20	17	14	11	15	18	17	34	36	36	40	1
60	7	2	3	8	11	11	7	6	7	10	8	5	19	25	20	19	1
60	8	6	9	11	12	9	10	8	4	5	10	12	15	11	16	21	-----
136	7	6	8	9	13	9	12	13	3	14	8	6	14	7	12	10	1
78	3	4	4	5	7	5	6	6	2	6	6	3	9	4	5	6	1
58	4	2	4	4	6	4	6	7	1	8	2	3	5	3	7	4	-----
161	9	10	14	20	26	25	28	18	11	16	15	14	12	25	15	8	1
97	3	5	5	12	16	15	20	10	8	11	12	11	7	9	7	1	1
64	6	5	9	8	10	10	8	8	3	5	3	3	5	16	8	7	-----
70	12	8	10	11	11	7	8	10	7	5	11	11	16	8	14	14	1
36	7	5	8	8	8	2	4	6	5	2	7	7	12	3	5	10	-----
34	5	3	2	3	3	5	4	4	2	3	4	4	4	5	9	4	1
60	6	3	17	13	10	6	8	10	6	5	14	17	18	11	11	18	-----
33	3	3	10	7	5	2	3	5	4	6	2	11	14	9	4	13	-----
27	3	---	7	6	5	4	5	5	2	4	3	3	3	9	7	5	-----
113	8	3	13	16	5	7	9	4	13	8	7	7	7	4	3	7	-----
65	4	3	7	9	2	4	2	4	9	4	4	4	3	3	1	1	-----
48	4	---	6	7	3	3	7	---	4	4	3	3	3	1	2	3	-----
54	4	6	12	6	6	2	3	3	6	4	3	10	5	7	11	9	1
36	2	1	4	1	2	2	---	1	5	2	---	7	4	5	8	7	1
18	2	5	8	5	4	---	3	2	1	2	3	3	1	2	3	2	-----
19	2	4	---	2	5	4	---	1	4	1	4	4	---	2	3	2	-----
9	1	4	---	2	3	1	---	1	3	---	3	4	---	2	1	2	-----
10	1	---	---	2	2	3	---	---	1	1	1	---	---	2	2	---	-----
85	9	8	13	11	10	5	18	15	16	13	21	24	35	34	42	51	-----
48	4	6	6	9	8	3	8	8	8	8	10	11	18	23	17	33	-----
37	5	2	7	2	8	2	10	7	8	5	11	13	17	11	25	18	-----
84	14	8	15	17	12	12	10	17	12	22	25	25	37	23	38	36	-----
37	10	5	10	8	7	5	3	8	6	9	10	12	27	13	18	17	-----
47	4	3	5	9	5	7	7	9	6	13	15	13	10	10	20	19	-----
5	4	3	2	---	---	1	---	1	1	1	1	---	---	---	---	---	-----
2	3	1	1	---	---	---	---	---	1	1	1	---	---	---	---	---	-----
3	1	2	1	---	---	1	---	1	---	---	---	---	---	---	---	---	-----
96	18	15	15	22	15	10	20	16	10	23	24	29	17	28	25	31	1
58	8	10	9	10	5	3	8	8	4	9	16	15	10	18	17	15	-----
38	10	5	6	12	10	7	12	8	6	14	8	14	7	10	8	16	1
43	2	2	9	15	2	13	7	7	6	12	11	6	12	10	16	10	1
21	1	2	6	---	5	1	2	1	1	9	7	4	6	6	12	7	-----
22	2	1	7	9	2	8	6	5	5	3	4	2	6	4	4	3	1
89	12	9	16	14	24	16	25	19	18	32	35	34	36	85	55	96	-----
57	8	4	8	3	10	8	10	8	8	15	17	19	22	50	29	52	-----
32	4	5	8	11	14	8	15	11	10	17	18	15	14	35	26	44	-----
68	7	10	10	7	7	8	15	13	5	12	8	10	17	13	19	16	-----
46	1	7	2	1	3	4	5	8	4	8	5	6	7	5	12	9	-----
22	6	3	8	6	4	4	10	5	1	4	3	4	10	8	7	7	-----
19	1	---	1	1	1	3	1	2	1	3	5	---	4	3	6	3	-----
10	1	---	1	---	---	1	1	---	1	3	3	---	3	2	2	2	-----
9	---	---	---	1	1	2	---	2	---	---	2	---	1	1	4	1	-----

† Stillbirths not included.

TABLE II.—CONTINUED.—Deaths in Michigan by ages,

Counties.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Ontonagon.....	Total.....	18	1	5	-----	1	1	-----
	Males.....	11	-----	5	-----	1	-----	-----
	Fem.....	7	1	-----	-----	-----	1	-----
Osceola.....	Total.....	182	10	35	6	1	-----	-----
	Males.....	85	6	14	3	-----	-----	-----
	Fem.....	97	4	21	3	1	-----	-----
Oscoda.....	Total.....	2	-----	-----	-----	-----	-----	-----
	Males.....	2	-----	-----	-----	-----	-----	-----
	Fem.....	-----	-----	-----	-----	-----	-----	-----
Otsego.....	Total.....	62	2	15	3	2	2	-----
	Males.....	39	-----	9	2	2	1	-----
	Fem.....	22	1	6	1	-----	1	-----
	Unk.....	1	-----	-----	-----	-----	-----	-----
Ottawa.....	Total.....	480	18	81	21	14	6	2
	Males.....	252	9	45	10	8	3	1
	Fem.....	227	8	36	11	6	3	1
	Unk.....	1	1	-----	-----	-----	-----	-----
Presque Isle.....	Total.....	45	-----	7	3	-----	3	-----
	Males.....	26	-----	4	-----	-----	3	-----
	Fem.....	19	-----	3	3	-----	-----	-----
Roscommon.....	Total.....	5	-----	1	1	-----	-----	-----
	Males.....	3	-----	-----	-----	-----	-----	-----
	Fem.....	2	-----	1	1	-----	-----	-----
Saginaw.....	Total.....	899	49	159	22	13	8	6
	Males.....	492	30	101	13	3	4	1
	Fem.....	407	19	58	9	10	4	5
Sanilac.....	Total.....	396	10	82	8	4	2	3
	Males.....	188	8	45	5	2	1	1
	Fem.....	206	1	39	3	2	1	2
	Unk.....	2	1	-----	-----	-----	-----	-----
Schoolcraft.....	Total.....	76	3	21	7	3	2	1
	Males.....	45	1	11	4	3	2	-----
	Fem.....	31	2	10	3	-----	-----	1
Shiawassee.....	Total.....	410	7	54	13	3	6	8
	Males.....	223	3	34	8	2	2	3
	Fem.....	187	4	20	5	1	4	5
St. Clair.....	Total.....	709	36	130	22	11	7	2
	Males.....	388	26	75	11	6	3	1
	Fem.....	321	10	55	11	5	4	1
St. Joseph.....	Total.....	292	5	30	9	3	1	-----
	Males.....	168	5	15	5	2	1	-----
	Fem.....	124	-----	15	4	1	-----	-----
Tuscola.....	Total.....	369	14	57	15	7	2	1
	Males.....	213	10	34	7	3	-----	1
	Fem.....	155	3	23	8	4	2	-----
	Unk.....	1	1	-----	-----	-----	-----	-----
Van Buren.....	Total.....	421	11	50	12	5	-----	6
	Males.....	225	7	27	8	1	-----	5
	Fem.....	195	4	22	4	4	-----	1
	Unk.....	1	-----	1	-----	-----	-----	-----
Washtenaw.....	Total.....	585	8	58	6	4	3	1
	Males.....	306	4	38	4	3	2	1
	Fem.....	279	4	20	2	1	1	-----

* Stillbirths included.

† Stillbirths not included.

DEATHS

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counties and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
7 6 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	2 2 1	2 2 1	2 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
42 17 25	4 1 3	4 1 4	6 3 3	12 8 4	5 4 1	5 2 3	4 2 4	8 3 5	9 3 6	12 7 5	12 4 8	7 5 2	7 4 3	8 6 2	12 6 6	15 6 9	15 6 9
				1 1							1 1						
22 14 8	4 3 1	1 1 1	3 1 2	4 3 1	3 1 2	1 1 1	4 3 1	2 2 1	2 2 1	4 2 2	2 2 2	3 3 1	2 1 1	1 1 1	1 1 1	1 1 1	1 1 1
124 67 57	16 11 5	10 3 7	15 8 7	19 8 11	12 5 7	22 4 18	20 7 13	13 6 7	11 9 2	5 2 3	16 7 9	27 12 15	31 19 12	40 21 19	34 22 12	46 31 15	1 1 1
13 7 6	3 1 2	1 1 1	2 2 1	3 3 1		1 1 1			2 1 1	4 3 1			4 2 2	4 1 3	5 4 1	3 2 1	3 2 1
2 2						1 1							1 1			1 1	1 1
208 122 86	22 6 16	19 11 8	27 15 12	51 27 24	31 10 21	34 17 17	35 18 17	36 21 15	28 15 13	49 29 20	52 23 23	36 17 19	65 38 27	56 32 24	52 33 19	48 21 27	1 1 1
99 52 47	9 5 4	6 2 4	16 7 9	20 6 14	18 5 13	9 5 4	11 3 8	13 1 12	14 9 5	16 9 7	23 10 13	15 7 8	26 15 11	28 15 13	22 14 8	39 15 24	2 1 1
34 20 14	3 1 2	2 1 1	1 1 1		2 2 2	2 2 2	5 3 2	1 1 1	4 4 1	2 2 2	4 4 2	3 3 3	2 1 1	3 2 1	2 1 1	1 1 1	2 1 1
84 49 35	11 4 7	13 8 5	10 3 7	13 5 8	17 6 11	13 2 11	10 3 7	14 11 3	10 6 4	20 11 9	17 8 9	27 15 12	27 14 13	37 21 16	37 24 13	43 30 13	
172 96 76	21 12 9	16 9 7	21 5 16	33 13 20	27 13 14	31 15 16	24 10 14	15 6 9	17 7 10	23 11 12	32 18 14	41 25 16	38 22 16	52 29 23	49 34 15	60 36 24	1 1 1
43 23 20	3 1 2	6 3 3	13 4 9	17 7 10	6 2 4	7 3 3	5 3 2	9 6 3	14 9 5	9 3 6	16 10 6	23 15 8	23 12 11	31 22 9	21 13 8	41 26 15	
82 45 37	7 5 2	4 2 2	12 6 6	13 6 7	15 7 8	9 3 6	12 5 7	3 3 4	9 5 4	19 7 12	19 15 4	32 19 13	35 22 13	26 16 10	24 15 9	34 22 12	
73 41 31 1	13 6 7	10 4 6	19 7 12	11 6 5	19 10 9	18 6 12	17 12 5	16 10 6	12 5 7	20 8 12	19 9 10	16 7 9	28 18 10	42 29 13	33 18 15	44 22 22	
72 48 24	20 15 5	16 10 6	16 9 7	20 11 9	22 7 15	12 6 6	29 16 13	26 11 15	24 7 17	40 23 17	32 20 12	30 14 16	41 17 24	47 35 22	52 22 30	77 41 36	1 1 1

† Stillbirths not included.

TABLE II.—CONCLUDED.—Deaths in Michigan by ages,

Counties.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Wayne.....	Total.....	5,269	422	1,307	211	94	50	43
	Males.....	2,762	227	694	110	50	19	20
	Fem.....	2,504	192	613	101	44	31	23
	Unk.....	3	3	—	—	—	—	—
Wexford.....	Total.....	147	11	39	3	2	2	2
	Males.....	73	5	23	2	2	2	—
	Fem.....	73	5	16	1	—	—	2
	Unk.....	1	1	—	—	—	—	—

* Stillbirths included.

† Stillbirths not included.

DEATHS

19

counties and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.																	
Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
1,705	152	63	140	207	194	195	191	205	156	196	211	242	241	262	218	265	4
893	79	34	81	98	105	95	99	112	100	115	115	128	124	117	118	118	4
812	73	29	59	109	89	100	92	93	56	81	96	114	117	145	100	147	-----
48	1	5	9	2	7	5	4	8	2	6	4	5	6	12	5	7	-----
29	3	3	5	2	1	2	1	4	1	2	1	4	3	4	2	4	-----
19	1	2	4	-----	6	3	3	4	1	4	3	1	3	8	3	3	-----
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

† Stillbirths not included.

TABLE III.—Causes of death in Michigan, by months,

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	ALL CAUSES.	Total. Males. Fem. Unk.	29,474 15,624 13,809 41	2,385 1,240 1,143 2	2,336 1,228 1,103 5	2,752 1,458 1,291 8	2,751 1,419 1,327 5	2,545 1,339 1,203 3	2,119 1,121 998 —	2,262 1,241 1,018 3	2,510 1,344 1,163 3	2,685 1,447 1,237 1	2,489 1,327 1,159 3	2,258 1,218 1,037 3	2,377 1,242 1,130 5
	Stillbirths. (Included in above.)	Total. Males. Fem. Unk.	1,300 728 536 36	113 67 44 2	88 48 35 5	124 72 46 6	101 55 41 5	122 64 56 2	90 54 36 —	114 61 50 3	127 60 64 3	90 57 32 1	107 54 51 2	118 75 41 2	106 61 40 5
1	Typhoid fever.....	Total. Males. Fem.	499 310 189	22 9 13	32 19 13	18 12 6	29 17 12	24 10 14	26 18 8	21 11 10	48 31 17	79 56 23	104 63 41	67 46 21	29 18 11
1a	Typho-malarial fever.....	Total. Males. Fem.	73 38 35	3 1 2	3 1 2	6 3 3	3 2 1	3 2 1	4 2 3	3 2 1	7 3 4	17 12 5	13 8 5	9 3 6	2 — 2
2	Typhus fever.....	Total. Males. Fem.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
3	Scurvy.....	Total. Males. Fem.	16 5 11	1 — 1	1 1 —	1 1 —	1 — 1	1 1 —	1 — 1	2 1 1	2 — 2	2 1 1	1 — 1	1 — —	2 — 2
4	Smallpox.....	Total. Males. Fem.	1 — 1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1 — —	— — —	— — —
5	Measles.....	Total. Males. Fem.	131 57 74	8 4 4	9 6 3	24 8 16	21 10 11	21 9 12	14 5 9	17 8 9	8 4 4	— — —	5 1 4	2 — 2	2 — —
6	Scarlet fever.....	Total. Males. Fem.	91 42 49	11 5 6	11 4 7	14 8 6	8 3 5	5 3 3	4 1 3	2 2 3	5 3 2	4 2 2	6 2 4	5 3 3	16 7 9
7	Whooping cough..	Total. Males. Fem.	282 130 152	13 8 5	13 4 9	19 10 9	28 15 13	24 7 17	26 13 13	40 19 21	36 16 20	36 17 19	15 5 10	13 5 8	19 11 8
8a	Diphtheria.....	Total. Males. Fem.	345 150 195	39 20 19	29 16 13	28 14 14	22 7 15	19 10 9	26 14 12	17 6 11	23 8 15	27 11 16	45 16 29	35 18 17	35 10 25
8b	Membranous croup.....	Total. Males. Fem.	63 31 32	14 6 8	9 5 4	3 2 1	5 4 1	6 — 6	— — —	4 3 1	— 2 —	3 2 1	6 3 3	7 3 4	6 3 3
8c	Croup.....	Total. Males. Fem.	48 30 18	5 3 2	5 2 3	4 2 2	4 2 2	5 3 2	1 — 1	1 1 —	2 1 2	2 — —	6 6 1	7 6 —	6 4 2
9	Influenza.....	Total. Males. Fem.	455 214 241	39 16 23	59 28 31	93 41 52	110 52 58	64 32 32	7 3 4	8 3 5	5 3 2	6 1 5	9 6 3	6 4 2	49 25 24
10	Miliary fever.....	Total. Males. Fem.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
11	Asiatic cholera.....	Total. Males. Fem.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
12	Cholera nostras....	Total. Males. Fem.	2 2 —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	2 2 —	— — —	— — —

CAUSES OF DEATH

21

ages and sex, during the year 1898. (Stillbirths included.)

Ages of decedents, 1898.																							Classification No.
Ages in years under five.					Ages by five-year periods.																		
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.	
6796	1065	452	317	218	8848	733	552	916	1203	1089	972	1062	1030	973	1170	1317	1475	1832	1887	1874	2394	47	
3765	584	245	159	113	4866	387	293	437	582	508	419	508	530	535	621	705	780	1016	1086	1056	1262	33	
2992	481	207	158	105	3943	346	259	479	621	581	553	554	500	438	549	612	695	816	901	818	1132	12	
39					39																	2	
1300					1300																		
728					728																		
536					536																		
36					36																		
1	4	5	2	1	13	33	46	68	89	63	46	30	23	33	15	13	9	6	6	6	6	1	
1	3	3	1	1	8	15	20	40	61	48	33	22	12	25	7	6	3	6	2	2	2		
	1	2			5	18	26	28	28	15	13	8	11	8	8	7	6	6	4	4	4	1a	
1					1	6	8	8	13	7	7	5	4	3	2	2	2	1	1	2	1		
1					1	1	6	3	10	6	3	1	2	1	2	2	1	1	1	1	1	2	
						5	2	5	3	1	4	4	2	2		2	1	1	1	1	1		
																						3	
																						4	
																						5	
4	1			1	2	8	1	2	1				1	2			1					6	
	1				1	2		1	1				1	1			1						
4				1	6	1	1	1	1					1								7	
																						8a	
																						8b	
																						8c	
																						9	
48	10	2	4	3	67	7	4	6	7	3	8	8	6	11	13	13	28	40	66	63	104	1	
21	5	1	1	1	29	3	4	4	1	2	4	4	5	7	7	3	14	22	33	27	48	1	
27	5	1	3	2	38	4	4	2	6	1	4	4	1	4	6	10	14	18	33	36	56		
																						10	
																						11	
																						12	

TABLE III.—CONTINUED.—Causes of death in Michigan, by months,

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
13	Other epidemic diseases*.....	Total.....	9	3	3	-----	-----	1	-----	1	-----	-----	-----	1	-----
		Males.....	7	2	3	-----	-----	1	-----	1	-----	-----	-----	-----	-----
		Fem.....	2	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
14	Pyemia and septicemia.....	Total.....	168	16	13	16	10	18	15	9	16	8	20	11	16
		Males.....	73	5	8	4	5	7	7	4	10	4	8	8	3
		Fem.....	95	11	5	12	5	11	8	5	6	4	12	3	13
15	Glanders.....	Total.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		Males.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
16	Malignant pustule.....	Total.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		Males.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
17	Rabies.....	Total.....	1	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----
		Males.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
18	Relapsing fever.....	Total.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		Males.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
19-20	Malaria.....	Total.....	175	9	8	9	10	8	17	14	17	37	30	11	5
		Males.....	97	2	4	6	5	5	8	7	10	25	16	6	3
		Fem.....	78	7	4	3	5	3	9	7	7	12	14	5	2
21	Pellagra.....	Total.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		Males.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
22a	Tuberculosis—lungs.....	Total.....	2,153	186	195	202	213	208	167	147	174	145	182	152	182
		Males.....	963	81	94	86	89	86	77	69	75	59	88	69	90
		Fem.....	1,190	105	101	116	124	122	90	78	99	86	94	83	92
22b	Tuberculosis—meninges.....	Total.....	120	14	16	10	10	8	11	11	10	6	13	7	4
		Males.....	60	9	6	5	7	5	4	8	5	4	3	3	1
		Fem.....	60	5	10	5	3	3	7	3	5	2	10	4	3
22c	Tuberculosis—peritoneum.....	Total.....	120	3	3	16	4	16	9	12	17	10	10	9	11
		Males.....	55	1	1	9	2	5	4	8	7	5	4	4	5
		Fem.....	65	2	2	7	2	11	5	4	10	5	6	5	6
22d	Tuberculosis—skin.....	Total.....	1	-----	-----	-----	-----	1	-----	-----	-----	-----	-----	-----	-----
		Males.....	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
22e	Tuberculosis—other organs.....	Total.....	62	8	2	4	13	7	6	4	4	4	2	8	-----
		Males.....	35	7	1	3	8	3	4	1	2	1	2	3	-----
		Fem.....	27	1	1	1	5	4	2	3	2	3	-----	5	-----
22f	Tuberculosis—general.....	Total.....	370	29	41	39	36	30	39	26	23	30	25	23	29
		Males.....	168	12	17	15	18	15	20	11	10	14	15	5	16
		Fem.....	202	17	24	24	18	15	19	15	13	16	10	18	13
23	Scrofula.....	Total.....	18	1	-----	3	-----	3	1	1	-----	1	2	3	3
		Males.....	10	1	-----	2	-----	2	1	1	-----	-----	2	1	-----
		Fem.....	8	-----	-----	1	-----	1	-----	-----	-----	1	-----	2	3
24	Syphilis.....	Total.....	55	6	3	12	4	4	-----	3	5	6	4	5	3
		Males.....	31	3	-----	8	1	3	-----	-----	-----	4	3	5	1
		Fem.....	24	3	3	4	3	1	-----	-----	5	2	1	-----	2
25a	Cancer—mouth.....	Total.....	32	2	7	-----	3	3	-----	3	4	4	1	1	3
		Males.....	22	2	4	-----	2	3	1	2	3	1	3	-----	3
		Fem.....	10	-----	3	-----	1	-----	2	-----	2	1	-----	1	-----
25b	Cancer—stomach or liver.....	Total.....	494	41	48	49	36	48	41	47	39	34	38	32	41
		Males.....	270	23	28	28	23	21	19	28	24	19	24	14	19
		Fem.....	224	18	20	21	13	27	22	19	15	15	14	18	22

* Includes 4 deaths from trichinosis, 3 in January, 1 in February; 1 death from rotheln in May death from chickenpox in July; 3 deaths from mumps. 2 in February, 1 in November.

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[illegible]

TABLE III.—CONTINUED.—*Causes of death in Michigan, by months,*

Classification No.	Causes of death. 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
25c	Cancer—intes- tines or rectum.	Total. Males. Fem.	106 52 54	14 6 8	3 2 1	12 5 7	7 2 5	3 2 1	5 3 2	10 5 5	10 5 5	13 10 3	13 6 7	9 3 6	7 5 2
25d	Cancer—uterus.	Total. Males. Fem.	155 155	14 14	11 11	15 15	12 12	11 11	15 15	10 10	11 11	14 14	14 14	15 15	13 13
25e	Cancer—breast.	Total. Males. Fem.	83 83	9 9	7 7	7 7	6 6	4 4	5 5	6 6	9 9	8 8	6 6	10 10	6 6
25f	Cancer—skin.	Total. Males. Fem.	41 28 13	2 1 1	1 1 1	5 4 1	4 2 2	5 4 1	2 1 1	1 1 4	10 6 4	2 2 1	5 4 1	1 1 1	3 2 1
25g	Cancer—other or- gans.	Total. Males. Fem.	410 177 233	29 13 16	30 16 14	27 9 18	52 25 27	36 14 22	35 16 19	33 13 20	31 11 20	41 19 22	40 18 22	30 12 18	26 11 15
26-27	Rheumatism.	Total. Males. Fem.	205 109 96	16 9 7	19 9 10	16 8 8	22 11 11	16 6 10	19 10 9	16 9 7	9 4 5	20 10 10	14 8 6	21 16 5	17 9 8
28	Diabetes.	Total. Males. Fem.	187 102 85	12 6 6	19 9 10	17 10 7	10 5 5	20 16 4	13 10 3	11 3 8	11 4 7	15 10 5	21 9 12	22 13 9	16 7 9
29	Exophthalmic goitre.	Total. Males. Fem.	7 7	1 1	1 1	— —	— —	— —	— —	— —	3 3	— —	— —	1 1	1 1
30	Addison's disease.	Total. Males. Fem.	20 11 9	1 — 1	— — —	3 3 —	— 1 2	3 2 —	4 2 —	— — —	— — —	3 1 2	3 3 —	1 — 1	2 1 1
31	Leukemia.	Total. Males. Fem.	10 4 15	1 — 1	1 — 1	2 — 2	2 — 2	— — —	2 1 1	1 — 1	3 1 2	1 — 1	3 1 2	2 — 2	1 1 —
32	Anemia, chlorosis.	Total. Males. Fem.	107 43 64	6 2 4	9 4 5	10 5 5	15 6 9	11 1 10	6 1 5	8 2 6	3 2 1	11 6 5	9 7 2	15 5 10	4 2 2
33	Other general diseases.	Total. Males. Fem.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
34	Alcoholism, acute and chronic.	Total. Males. Fem.	47 45 2	6 6 —	4 4 —	5 5 —	3 3 —	5 5 —	4 4 —	4 4 —	3 3 —	3 3 —	— — —	6 6 —	4 2 2
35-37	Chronic poison- ings.	Total. Males. Fem.	10 4 6	1 1 —	— — —	2 — 2	2 — 2	— — —	— — —	1 — 1	— — —	3 3 —	1 — —	— — —	— — —
38	Encephalitis.	Total. Males. Fem.	129 72 57	11 9 2	7 3 4	17 12 5	13 9 4	13 8 5	6 1 5	10 4 6	13 7 6	10 4 6	11 4 7	5 4 1	13 7 6
39a	Simple meningitis.	Total. Males. Fem.	417 221 196	32 12 20	21 10 11	53 28 25	42 29 13	49 17 32	32 16 16	22 13 9	28 15 13	39 24 15	33 21 12	34 20 14	32 16 16
39b	Epidemic cerebro- spinal meningitis.	Total. Males. Fem.	254 126 128	16 7 9	14 5 9	18 14 4	28 13 15	20 9 11	30 14 16	26 14 12	24 11 13	27 14 13	21 9 12	13 9 4	17 7 10

CAUSES OF DEATH

25

ages and sex, during the year 1898. (Stillbirths included.)

Ages of decedents, 1898.																							Classification No.	
Ages in years under five.					Ages by five-year periods.																			
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25. to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.		
---	1	---	---	1	2	---	1	1	1	2	1	5	9	10	6	12	20	10	16	5	5	---	} 25c	
---	1	---	---	1	1	---	1	1	---	1	2	1	2	4	6	11	8	8	4	1	4	---		
---	---	---	---	1	1	---	---	---	1	5	8	11	17	20	19	19	27	16	4	4	3	---	} 25d	
---	---	---	---	1	1	---	---	---	1	5	8	11	17	20	19	19	27	16	4	4	3	---		
---	---	---	---	---	---	---	---	---	---	1	3	5	5	6	13	13	9	7	9	9	3	---	} 25e	
---	---	---	---	---	---	---	---	---	---	1	3	5	5	6	13	13	9	7	9	9	3	---		
1	---	---	---	1	1	---	---	---	2	---	1	1	1	2	5	2	4	4	6	6	6	---	} 25f	
1	---	---	---	1	1	---	---	---	2	---	1	1	1	2	4	2	3	3	6	4	2	---		
2	2	2	2	2	1	9	4	1	6	4	5	11	18	24	25	42	56	43	51	47	27	36	1	} 25g
2	2	2	1	1	4	2	1	2	2	3	6	12	14	18	26	37	27	27	24	12	15	1	---	
2	1	---	1	1	5	8	11	8	9	5	11	12	5	9	12	12	18	21	29	18	12	---	} 26-27	
2	1	---	1	1	5	7	6	3	4	1	4	6	1	2	10	5	7	12	20	13	3	---		
---	---	---	1	2	5	13	9	8	10	11	9	7	3	13	11	20	19	25	15	7	---	} 28		
---	---	---	1	2	2	9	4	5	7	7	2	4	1	9	1	15	12	13	8	3	---			
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	} 29	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	} 30	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
1	---	---	---	1	2	1	1	---	1	2	2	2	2	2	2	2	---	---	---	---	---	---	} 31	
1	---	---	---	1	2	1	1	---	1	2	1	2	2	1	2	2	---	---	---	---	---	---		
9	4	---	---	1	14	2	4	5	6	6	6	6	5	6	6	7	6	7	8	7	6	---	} 32	
5	2	---	---	1	8	1	1	---	4	1	1	2	1	2	1	4	3	3	5	5	5	---		
4	2	---	---	1	6	1	3	5	2	6	5	3	6	4	5	3	3	4	5	2	1	---	} 33	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	} 34	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	} 35-37	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
42	9	5	3	68	6	8	2	2	5	4	3	5	5	2	4	6	1	1	3	4	---	---	} 38	
26	4	3	1	35	5	5	1	1	3	1	1	4	2	2	4	3	1	---	2	4	---	---		
16	5	6	4	33	1	3	1	1	2	3	2	1	3	2	2	3	1	---	1	1	---	---	} 39a	
134	70	19	15	12	250	39	20	19	11	10	10	7	11	8	5	5	3	7	6	3	2	1		---
72	42	10	6	8	138	16	10	12	5	4	6	5	5	4	3	4	4	3	1	1	---	---	} 39b	
62	28	9	9	4	112	23	10	7	6	6	4	2	6	4	2	1	3	3	3	2	1	---		
81	30	22	14	6	153	28	19	15	11	8	7	6	2	1	1	2	---	1	---	---	---	---	} 39b	
42	13	7	6	1	69	15	12	8	7	3	3	5	1	1	1	1	---	1	---	---	---	---		
39	17	15	8	5	84	13	7	7	4	5	4	1	1	---	1	1	---	---	---	---	---	---	} 39b	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
42	Cerebral congestion, hemorrhage	Total. Males. Fem..	1,144 611 533	91 40 51	90 49 41	112 63 49	132 68 64	89 51 38	96 55 41	74 38 36	86 43 43	82 39 44	86 51 35	99 48 51	106 63 43
43	Cerebral softening.....	Total. Males. Fem..	94 53 41	6 4 2	15 7 8	7 5 2	6 4 2	4 2 2	11 10 1	14 6 8	5 3 2	5 2 3	7 1 6	7 4 3	7 5 2
44	Paralysis.....	Total. Males. Fem.. Unk..	789 388 400 1	66 34 32	84 41 43	69 34 35	73 35 38	61 32 29	61 28 33	57 29 28	50 29 21	64 35 34	67 34 31	69 37 38	68 30 38
45	General paralysis of insane.....	Total. Males. Fem..	95 67 28	5 2 3	7 6 1	11 11	3 2 1	10 9 1	13 5 8	6 5 1	2 1 1	9 7 2	10 6 4	8 5 3	11 8 3
46	Other forms of insanity	Total. Males. Fem..	67 38 29	5 4 1	3 3	3 1	4 2 2	8 4 4	7 3 4	6 2 2	5 4 3	6 4 3	4 3 1	6 3 2	10 5 5
47	Epilepsy.....	Total. Males. Fem..	97 56 41	9 6 3	7 5 2	13 9 4	8 5 3	10 3 7	8 6 6	6 3 3	7 5 2	9 6 3	4 3 1	7 5 2	9 4 5
48	Convulsions.....	Total. Males. Fem..	24 11 13	3 1 2	3 2 3	----- ----- -----	1 1 -----	1 ----- 1	1 1 1	2 1 1	1 1 1	1 1 -----	4 1 3	4 2 2	3 1 1
49	Convulsions of infants	Total. Males. Fem.. Unk..	516 311 204 1	53 34 19	33 20 13	49 29 19	56 31 25	51 33 18	41 24 17	42 22 20	36 22 14	47 28 19	30 22 8	39 22 17	35 24 15
50	Tetanus.....	Total. Males. Fem..	20 14 6	1 1 -----	----- ----- -----	1 1 -----	----- ----- -----	----- ----- -----	----- ----- -----	6 6 -----	3 2 1	4 2 2	4 1 3	1 1 -----	----- ----- -----
40-41 50-54	Other nervous diseases	Total. Males. Fem..	317 165 152	23 18 5	24 13 11	31 14 17	29 14 15	25 11 14	34 21 13	32 16 16	32 7 20	27 8 9	17 14 13	27 15 9	24 14 10
55	Pericarditis.....	Total. Males. Fem..	109 60 49	4 2 2	7 6 6	7 3 4	15 8 7	9 7 2	10 8 2	11 6 5	11 5 6	11 8 4	8 5 3	8 4 4	8 4 4
56	Endocarditis.....	Total. Males. Fem..	74 35 39	9 4 5	7 3 4	7 3 4	4 2 2	5 3 2	6 3 3	6 5 1	6 4 2	5 4 4	5 1 4	5 2 5	9 2 3
57	Organic heart disease.....	Total. Males. Fem..	2,016 1,116 900	182 93 89	180 106 74	195 109 86	205 108 97	181 102 79	132 77 55	160 87 73	171 100 71	130 67 63	133 67 66	174 107 67	173 93 80
58	Angina pectoris.....	Total. Males. Fem..	143 83 60	9 6 3	10 7 3	8 4 4	18 9 9	14 8 6	9 8 3	16 10 6	10 7 3	10 7 3	12 8 8	13 5 8	14 10 4
59	Diseases of the arteries.....	Total. Males. Fem..	74 43 31	7 4 3	5 4 1	6 4 2	8 6 2	9 4 5	4 ----- 4	4 2 2	5 3 2	2 2 -----	6 4 2	9 4 5	9 6 3
60	Embolism.....	Total. Males. Fem..	19 10 9	1 ----- 1	1 ----- 1	2 1 -----	3 3 -----	1 1 -----	1 ----- 1	1 ----- 1	1 ----- 1	1 ----- 1	1 ----- 1	1 ----- 1	5 2 3
61	Varices, hemorrhoids.....	Total. Males. Fem..	3 1 2	----- ----- -----	----- ----- -----	1 ----- -----	----- ----- -----	----- ----- -----	----- ----- -----	----- ----- -----	1 ----- -----	----- ----- -----	----- ----- -----	1 ----- -----	----- ----- -----

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Ages of decedents, 1898.																				Classification No.			
Ages in years under five.					Ages by five-year periods.																		
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.		75 to 79.	80 +	Unk.
64	11	6	4	4	89	4	7	8	10	21	19	29	35	49	72	93	124	153	152	140	135		} 42
44	4	4	2	2	56	2	6	3	5	10	11	17	18	25	33	49	70	79	82	80	65		
20	7	2	2	2	33	2	1	5	3	11	8	12	17	24	39	44	58	74	70	60	70		
							1		3				1	3	5	2	7	7	10	15	22	18	} 43
							1		3				2	2	1	4	3	6	6	13	11		
													1	3	2	1	3	4	9	9	7		
3	3				6	7	3	3		5	3	11	19	17	35	40	64	115	137	144	178	2	} 44
	2				2	4	2	1		2		5	8	9	18	20	32	59	69	79	77	1	
3	1				4	3	1	2		3	3	6	11	8	17	20	32	56	68	65	101		
																						1	} 45
									1	2		6	17	12	10	14	6	6	6	10	5		
										1	2	4	12	9	8	11	3	3	4	6	4		
												2	5	3	2	3	3	3	2	4	1		} 46
																							} 47
																							} 48
																							} 49
																							} 50
																							} 51-54
																							} 55

TABLE III.—CONTINUED.—*Causes of death in Michigan, by months,*

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
62	Phlebitis.....	Total.....	12	—	—	1	1	2	3	3	2	—	—	—	—
		Males.....	3	—	—	—	—	—	1	2	—	—	—	—	—
		Fem.....	9	—	—	1	1	2	2	1	2	—	—	—	—
63	Lymphangitis....	Total.....	2	—	—	—	—	—	—	1	—	—	1	—	—
		Males.....	—	—	—	—	—	—	—	—	—	—	—	—	—
		Fem.....	2	—	—	—	—	—	—	1	—	—	1	—	—
64	Other lymphatic diseases.....	Total.....	10	3	1	—	1	—	1	2	—	—	1	1	—
		Males.....	5	2	1	—	1	—	—	—	—	—	—	1	—
		Fem.....	5	1	—	—	—	—	1	2	—	—	1	—	—
65	Hemorrhage.....	Total.....	60	1	1	3	3	1	6	2	6	8	11	6	12
		Males.....	31	—	—	2	2	—	4	2	3	3	5	4	6
		Fem.....	29	1	1	1	1	1	2	—	3	5	6	2	6
66	Other circulatory diseases.....	Total.....	18	—	1	1	2	2	—	3	—	—	2	4	3
		Males.....	6	—	—	—	1	1	—	1	—	—	1	1	1
		Fem.....	12	—	1	1	1	1	—	2	—	—	1	3	2
67	Disease of the nose.....	Total.....	2	—	—	1	—	—	—	—	—	—	1	—	—
		Males.....	1	—	—	1	—	—	—	—	—	—	—	—	—
		Fem.....	1	—	—	—	—	—	—	—	—	—	1	—	—
68	Disease of larynx and thyroid.....	Total.....	43	6	3	4	2	3	5	2	2	—	4	5	7
		Males.....	32	3	2	2	—	1	3	1	1	—	—	3	4
		Fem.....	21	3	1	2	2	2	2	1	1	—	2	2	3
69	Acute bronchitis	Total.....	395	41	39	51	41	36	20	18	19	18	28	40	44
		Males.....	211	25	26	31	21	16	11	11	11	8	19	12	20
		Fem.....	184	16	13	20	20	20	9	7	8	10	9	28	24
70	Chronic bronch- itis.....	Total.....	248	35	34	29	29	27	16	20	8	12	11	20	17
		Males.....	106	17	12	12	9	7	9	6	7	4	4	12	7
		Fem.....	142	18	12	17	20	20	7	14	1	8	7	8	10
71	Broncho-pneu- monia.....	Total.....	242	28	34	36	33	24	14	8	6	7	15	16	21
		Males.....	127	10	23	21	16	9	7	5	2	2	10	12	10
		Fem.....	115	18	11	15	17	15	7	3	4	5	5	4	11
72	Pneumonia.....	Total.....	1,805	222	234	275	238	213	88	49	43	64	81	136	162
		Males.....	992	119	130	145	128	126	58	31	19	30	43	74	89
		Fem.....	813	103	104	130	110	87	30	18	24	34	38	62	73
73	Pleurisy.....	Total.....	107	3	12	18	15	14	4	5	2	6	3	8	17
		Males.....	44	—	5	8	6	8	—	2	1	3	—	2	9
		Fem.....	63	3	7	10	9	6	4	3	1	3	3	6	8
74	Congestion of lungs.....	Total.....	159	14	9	13	15	22	10	9	5	10	11	20	21
		Males.....	92	8	6	9	9	11	5	6	3	4	5	12	14
		Fem.....	67	6	3	4	6	11	5	3	2	6	6	8	7
75	Gangrene of lungs	Total.....	5	1	1	—	—	—	1	—	—	1	1	—	—
		Males.....	3	—	1	—	—	—	1	—	—	—	1	—	—
		Fem.....	2	1	—	—	—	—	—	—	—	1	—	—	—
76	Asthma and emphysema....	Total.....	111	19	6	10	7	10	6	4	13	8	10	7	11
		Males.....	65	6	4	7	4	8	3	3	8	5	7	6	4
		Fem.....	46	13	2	3	3	2	3	1	5	3	3	1	7
77	Other respiratory diseases.....	Total.....	119	7	8	9	14	9	7	8	11	12	7	13	14
		Males.....	61	5	7	4	6	5	4	6	4	8	2	3	7
		Fem.....	58	2	1	5	8	4	3	2	7	4	5	10	7
78	Diseases of the mouth.....	Total.....	31	7	—	—	1	3	3	3	—	5	4	2	3
		Males.....	14	4	—	—	—	1	2	1	—	2	1	1	2
		Fem.....	17	3	—	—	1	2	1	2	—	3	3	1	1
79	Diseases of phar- ynx and esophagus	Total.....	36	5	2	5	6	2	4	1	2	3	2	2	2
		Males.....	18	3	—	3	4	1	2	1	2	1	1	—	—
		Fem.....	18	2	2	2	2	1	2	—	—	2	1	2	2

29

Ages of decedents, 1898.

Ages in years under five.					Ages by five year periods.																	Classification No.	
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +		Unk.
											1	3		2		1	1	2	2			62	
											1	3		2		1	1	2	1	1			
																	1	1				63	
																	1	1					
1					1		1		1		1	1	1	1		1		1			1	64	
1					1		1		1		1	1	1	1		1		1			1		
17	1				19	3		1	3	4	2	5	5	2	2	3	2	2	3	2	2	65	
7			1		8	3		1	1	3	1	1	2	2	1	3	1	1	3	2	2		
10	1				11				2	1	1	4	3	2	1	1	1	1		2	2		
2					2			1		1		2	1	2	2			2	2		2	66	
1					1			1				2	1	2	2			2	2		1		
1					1					1			1	1	2			2	2		1	1	
1					1										1							67	
13	6	1	4		24	3	1		1		2		1	3	1	2	1	1	2		1	68	
7	4		1		12	2	1		1				1	1	1	2		1	1	1			
6	2	1	3		12	1					2			2	2		1	1	1		1		
221	61	16	4	3	305	6	1	1	1	1	1	1	2	2	6	5	8	10	14	12	19	69	
119	39	10	1	2	171	5	1	1	1						2	1	4	5	6	5	9		
102	22	6	3	1	134	1				1	1	1	2	2	4	4	4	5	8	7	10		
8	5	1	1		15		1	2	3	1	1	7	6	10	8	14	17	29	48	35	51	70	
2					5				3	1		3	2	3	5	5	10	12	18	13	26		
6	2	1	1		10		1	2			1	4	4	7	3	9	7	17	30	22	25		
118	24	13	10	2	167	12	1	2	2	2	1	1			2	4	4	4	7	16	10	7	71
66	11	5	7		89	6				1	1	1		1	1	2	2	2	1	10	4	5	
52	13	8	3	2	78	6	1	2	2	1				1	2	2	2	6	6	6	2		
364	145	42	26	16	593	56	25	51	60	60	54	61	59	60	70	76	89	114	123	132	119	3	72
220	76	21	9	7	333	33	12	27	39	32	31	34	38	37	40	45	51	59	58	62	58		
144	69	21	17	9	200	23	13	24	21	28	23	27	21	23	30	31	38	55	65	70	61	3	
1	3	1	1		6	2	2	4	6	6	5	6	9	7	6	7	16	9	5	5	6	73	
1	2	1			4	1	1	4	4	3	2	3	2	3	2	4	7	3	2	2	2		
	1		1		2	1	2	3	2	3	3	4	6	5	4	3	9	6	3	3	4		
51	6	2		3	62	3	1	2	5	5	4	3	8	1	8	2	12	7	10	10	16	74	
33	2	2		1	38	2		1	3	2		3	6	1	4	1	6	7	6	5	7		
18	4			2	24	1	1	1	2	3	4		2		4	1	6		4	5	9		
														1	2	1			1			75	
														1	2	1			1				
5			1		6		1	1	2	3	2	3	4		6	8	12	17	23	12	10	1	76
2					3		1		1	1	2	1	1	1	5	7	10	9	14	5	5		
3			1		3			1	1	1	2	2	3		1	1	2	8	9	7	5		
8	1		2		11	3		3	6	6		5	6	5	7	6	8	15	16	9	12	1	77
3					5	2		2	5	2		2	4	4	5	1	6	10	5	6	2		
5	1		2		6	1		1	1	4		3	2	1	2	5	2	5	11	3	10	1	
24	4				28	1										1					1	78	
11	2				13											1					1		
13	2				15	1										1					1		
4	1	2	1	2	10	6	1	3		1			2		1	2	2		3	1	2	79	
2		1	1	2	7	3	1	2					2		1	2	2	1		1	2		
2					3			1	1				2		1	2	2	1		2			

TABLE III.—CONTINUED.—*Causes of death in Michigan, by months,*

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
80	Ulcer of the stomach.....	Total.	61	6	2	4	4	4	7	6	5	8	8	2	5
		Males.	31	5	2	3	3	1	1	4	3	2	4	1	2
		Fem.	30	1	—	1	1	3	6	2	2	6	4	1	3
81	Other diseases of stomach.....	Total.	423	42	33	44	36	39	38	37	33	31	31	21	21
		Males.	210	21	17	24	14	23	16	18	23	15	14	16	9
		Fem.	213	21	16	20	22	16	22	20	14	18	17	15	12
82	Infantile diarrhea, gastro-enteritis.....	Total.	1,782	24	32	35	55	49	85	271	423	488	224	55	41
		Males.	965	14	19	20	32	31	35	158	229	261	114	32	20
		Fem.	817	10	13	15	23	18	50	113	194	227	110	23	21
83	Diarrhea and enteritis.....	Total.	314	21	23	25	17	16	10	29	48	60	41	14	10
		Males.	173	11	12	16	8	9	6	15	29	32	24	5	6
		Fem.	141	10	11	9	9	7	4	14	19	28	17	9	4
84	Dysentery.....	Total.	150	3	4	3	7	2	—	13	29	47	37	3	2
		Males.	72	2	1	1	4	1	—	6	15	24	17	1	—
		Fem.	78	1	3	2	3	1	—	7	14	23	20	2	2
86	Hernia and intestinal obstructions.....	Total.	254	14	20	19	25	25	23	17	26	26	18	19	22
		Males.	129	6	9	11	12	11	10	9	16	14	13	8	10
		Fem.	125	8	11	8	13	14	13	8	10	12	5	11	12
85, 87	Other diseases of the intestines.....	Total.	117	14	8	7	2	6	5	17	7	10	16	11	14
		Males.	68	14	5	4	—	4	4	9	4	7	8	2	7
		Fem.	49	—	3	3	2	2	1	8	3	3	8	9	7
88	Acute yellow atrophy of liver.....	Total.	15	—	1	—	—	2	2	2	1	3	1	—	3
		Males.	10	—	1	—	—	—	1	2	1	3	—	—	2
		Fem.	5	—	—	—	—	2	1	—	—	—	1	—	1
90	Cirrhosis of liver.....	Total.	148	8	8	14	18	19	17	6	11	15	10	9	13
		Males.	103	6	6	8	12	13	10	4	9	10	9	6	10
		Fem.	45	2	2	6	6	6	7	2	2	5	1	3	3
89, 91, 92	Other diseases of the liver.....	Total.	314	16	21	41	24	33	29	18	27	33	21	27	24
		Males.	148	5	7	19	14	15	17	8	16	19	9	11	8
		Fem.	166	11	14	22	10	18	12	10	11	14	12	16	16
93	Peritonitis.....	Total.	284	31	16	24	28	23	19	29	22	24	22	25	21
		Males.	108	10	7	6	10	10	8	9	9	12	12	7	8
		Fem.	176	21	9	18	18	13	11	20	13	12	10	18	13
94	Other diseases of digestive system.....	Total.	12	7	2	2	—	1	—	—	—	—	—	—	—
		Males.	7	4	—	2	—	1	—	—	—	—	—	—	—
		Fem.	5	3	2	—	—	—	—	—	—	—	—	—	—
95	Iliac abscess.....	Total.	165	13	11	15	16	9	19	16	15	13	9	15	14
		Males.	112	7	5	10	12	6	13	11	11	8	7	13	9
		Fem.	53	6	6	5	4	3	6	5	4	5	2	2	5
96	Acute nephritis.....	Total.	96	9	2	10	8	5	6	5	12	9	9	7	14
		Males.	49	2	2	5	4	1	2	2	7	5	5	5	9
		Fem.	47	7	—	5	4	4	4	3	5	4	4	2	5
97	Bright's disease.....	Total.	915	85	69	96	90	86	68	59	50	74	80	75	83
		Males.	570	50	37	59	59	58	50	38	33	43	50	43	50
		Fem.	345	35	32	37	31	28	18	21	17	31	30	32	33
98-100	Other diseases of kidneys.....	Total.	104	13	9	12	8	7	11	7	4	7	9	6	11
		Males.	70	8	5	8	6	5	6	6	4	6	8	5	3
		Fem.	34	5	4	4	2	2	5	1	—	1	1	1	8
101	Vesical calculi.....	Total.	6	3	1	—	—	1	1	—	—	—	—	—	—
		Males.	6	3	1	—	—	1	1	—	—	—	—	—	—
		Fem.	—	—	—	—	—	—	—	—	—	—	—	—	—
102	Diseases of the bladder.....	Total.	144	19	12	10	13	11	14	12	7	8	12	15	11
		Males.	128	15	10	8	12	10	12	12	6	7	12	14	10
		Fem.	16	4	2	2	1	1	2	—	1	1	—	1	1

CAUSES OF DEATH

31

ages and sex, during the year 1898. (Stillbirths included.)

Ages of decedents, 1898.																							Classification No.
Ages in years under five.					Ages by five-year periods.																		
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.	
2	1	---	---	---	3	1	---	---	---	2	1	5	5	4	5	4	4	12	5	6	4	---	
2	1	---	---	---	3	1	---	---	---	2	1	2	2	3	3	2	2	3	5	3	3	1	
---	---	---	---	---	---	1	---	---	---	2	1	3	3	3	2	2	2	1	7	2	2	1	
93	9	5	1	1	109	10	1	3	7	4	17	7	17	13	27	26	27	46	35	37	37	---	
47	6	1	---	1	55	4	---	2	---	1	6	2	8	7	13	14	14	24	18	25	17	---	
46	3	4	1	---	54	6	1	1	7	3	11	5	9	6	14	12	13	22	17	12	20	---	
1369	264	87	42	17	1779	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
733	150	52	19	9	963	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
636	114	35	23	8	816	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
5	3	2	---	---	10	10	7	11	8	8	8	7	7	10	11	18	27	34	38	29	71	---	
3	2	1	---	---	6	5	4	4	3	5	3	4	5	4	7	7	13	22	21	17	43	---	
2	1	1	---	---	4	5	3	7	5	3	5	3	2	6	4	11	14	12	17	12	28	---	
23	11	10	6	2	52	3	---	2	1	2	1	1	2	3	4	8	4	10	12	21	23	1	
10	7	8	5	2	32	1	---	---	1	1	1	---	1	1	1	3	3	3	4	12	10	---	
13	4	2	1	---	20	2	---	2	1	1	1	1	2	2	3	5	1	7	8	9	13	---	
33	1	4	3	3	44	10	1	11	9	7	4	12	6	12	18	20	15	24	21	16	23	1	
21	1	3	2	2	29	6	---	7	5	6	---	5	3	5	8	11	7	9	9	9	10	---	
12	---	1	1	1	15	4	1	4	4	1	4	7	3	7	10	9	8	15	12	7	13	---	
24	5	1	1	1	32	7	3	2	8	2	3	5	7	8	3	4	4	5	6	4	14	---	
13	4	1	---	---	18	2	2	1	7	1	1	3	1	5	3	2	2	2	3	3	12	---	
11	1	---	1	1	14	5	1	1	1	1	2	2	6	3	---	2	2	3	3	1	2	---	
1	---	---	---	---	1	---	---	1	---	2	1	1	---	1	2	---	5	---	---	1	---	---	
1	---	---	---	---	1	---	---	1	---	1	1	1	---	1	1	---	4	---	---	1	---	---	
---	1	---	---	---	1	1	---	---	2	2	2	5	9	12	19	21	19	20	22	10	3	---	
---	1	---	---	---	1	---	---	---	2	1	1	4	8	8	16	17	12	11	15	6	1	---	
---	---	---	---	---	---	---	---	---	1	1	1	1	1	4	3	4	7	9	7	4	2	---	
15	3	4	2	---	24	1	3	4	2	8	8	11	18	25	23	33	28	42	37	25	22	---	
10	3	2	2	---	17	1	2	1	2	4	6	6	5	13	7	17	10	25	16	11	5	---	
5	---	2	---	---	7	---	1	3	---	4	2	5	13	12	16	16	18	17	21	14	17	---	
20	7	6	1	5	39	13	17	27	31	35	30	15	10	8	4	9	10	12	12	8	4	---	
16	4	2	---	3	25	7	9	11	9	8	5	7	2	3	1	3	2	4	7	4	1	---	
4	3	4	1	2	14	6	8	16	22	27	25	8	8	5	3	6	8	8	5	4	3	---	
1	2	---	---	---	3	---	---	---	---	---	1	---	---	1	---	1	---	2	1	3	---	---	
1	1	---	---	---	1	---	---	---	---	---	---	---	---	1	---	1	---	2	1	---	2	---	
---	---	1	1	3	5	17	27	25	20	13	13	11	9	9	4	3	3	4	1	1	---	---	
---	---	1	2	3	9	17	15	15	11	6	9	9	9	7	3	3	2	3	---	---	---	---	
---	1	---	1	1	2	8	10	10	5	2	7	2	---	2	1	---	1	1	1	1	---	---	
8	3	2	1	---	14	4	1	6	4	9	5	8	3	7	3	5	6	5	4	7	4	1	
5	2	---	---	---	7	2	---	4	2	1	3	2	1	5	---	4	5	3	2	5	2	1	
3	1	2	1	---	7	2	1	2	2	8	2	6	2	2	3	1	1	2	2	2	2	---	
7	2	1	4	3	17	8	7	14	25	22	31	41	40	50	70	64	102	126	124	103	69	2	
6	---	2	3	11	5	3	10	8	11	16	25	37	34	36	36	65	87	81	77	46	2	---	
1	2	1	2	---	6	3	4	4	17	11	15	16	23	16	34	28	37	39	43	26	23	---	
3	1	---	---	1	5	---	2	1	2	4	4	4	3	6	4	12	4	10	13	12	18	---	
1	1	---	---	---	2	---	1	1	1	3	1	2	1	4	3	8	4	6	10	9	14	---	
2	---	---	---	1	3	---	1	---	1	1	3	2	2	2	1	4	---	4	3	3	4	---	
---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	1	---	1	1	1	1	---	---	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	1	1	1	1	---	
2	---	---	---	---	2	---	1	---	---	3	1	2	3	---	2	6	8	30	20	26	39	1	
1	---	---	---	---	1	---	1	---	---	1	1	---	2	---	2	5	8	28	19	25	34	1	
1	---	---	---	---	1	---	---	---	---	2	---	2	1	---	---	1	---	2	1	1	5	---	

TABLE III.—CONTINUED.—*Causes of death in Michigan, by months,*

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
103, 106	Diseases of male genital organs.	Total. Males. Fem.	59 59 59	6 6 6	4 4 4	10 10 10	2 2 2	6 6 6	1 1 1	6 6 6	6 6 6	3 3 3	5 5 5	4 4 4	6 6 6
111	Uterine tumor.	Total. Males. Fem.	21 21 21	— — —	1 1 1	6 6 6	1 1 1	4 4 4	1 1 1	— — —	4 4 4	1 1 1	1 1 1	— — —	2 2 2
109, 110, 112	Other uterine diseases.	Total. Males. Fem.	20 20 20	3 3 3	2 2 2	3 3 3	1 1 1	— — —	2 2 2	1 1 1	2 2 2	3 3 3	— — —	— — —	3 3 3
113	Ovarian tumors.	Total. Males. Fem.	27 27 27	1 1 1	3 3 3	1 1 1	1 1 1	3 3 3	1 1 1	— — —	4 4 4	4 4 4	4 4 4	3 3 3	2 2 2
107, 108, 114, 115	Other diseases of female genital organs.	Total. Males. Fem.	60 60 60	6 6 6	8 8 8	3 3 3	6 6 6	7 7 7	3 3 3	4 4 4	6 6 6	3 3 3	4 4 4	4 4 4	6 6 6
116-118, 123, 124	Accidents of pregnancy.	Total. Males. Fem.	151 151 151	8 8 8	18 18 18	13 13 13	19 19 19	16 16 16	15 15 15	13 13 13	6 6 6	7 7 7	5 5 5	9 9 9	22 22 22
119, 120, 122	Puerperal septi-cemia.	Total. Males. Fem.	170 170 170	15 15 15	16 16 16	17 17 17	18 18 18	18 18 18	14 14 14	11 11 11	11 11 11	13 13 13	12 12 12	12 12 12	13 13 13
121	Puerperal albuminuria.	Total. Males. Fem.	66 66 66	7 7 7	4 4 4	9 9 9	7 7 7	6 6 6	7 7 7	6 6 6	4 4 4	1 1 1	3 3 3	8 8 8	4 4 4
125	Erysipelas.	Total. Males. Fem.	66 29 37	12 3 9	8 6 2	8 6 2	7 2 5	7 3 4	5 1 4	5 4 1	2 1 2	1 — 1	1 — 1	5 2 3	5 2 3
126	Gangrene.	Total. Males. Fem.	91 58 33	— — —	2 2 2	11 8 3	7 4 3	12 6 6	6 5 1	7 3 4	6 4 2	13 8 5	6 4 2	7 6 1	14 8 6
127	Anthrax.	Total. Males. Fem.	3 2 1	— — —	— — —	1 — —	— — —	1 — —	— — —	— — —	— — —	1 — —	— — —	— — —	— — —
128	Phlegmon, acute abscess.	Total. Males. Fem.	47 27 20	1 1 —	1 1 —	3 3 —	2 — 2	1 — 1	2 — —	5 1 4	3 2 1	4 2 2	12 7 5	5 3 2	8 5 3
129	Other diseases of skin.	Total. Males. Fem.	20 10 10	1 1 —	— — —	3 1 2	4 1 3	1 1 1	3 1 2	2 — —	1 — —	— — —	2 2 —	2 2 —	1 — 1
130	Pott's disease.	Total. Males. Fem.	37 20 17	— — —	4 2 2	3 2 1	4 2 2	6 3 3	7 3 4	4 2 2	4 2 2	3 2 1	1 — —	— — —	1 1 —
131	Chronic or cold abscess.	Total. Males. Fem.	10 8 2	— — —	— — —	— — —	2 1 1	— — —	— — —	1 1 —	2 1 1	2 2 —	3 3 —	— — —	— — —
133	White swellings.	Total. Males. Fem.	5 2 3	— — —	1 1 —	— — —	1 — —	— — —	1 — —	— — —	— — —	1 — —	— — —	— — —	1 — 1
132, 134, 136	Other diseases of locomotor system.	Total. Males. Fem.	38 24 14	7 2 5	3 2 1	1 1 —	4 2 2	5 4 1	2 1 1	5 4 1	3 2 1	5 4 1	— — —	1 1 —	2 1 1

CAUSES OF DEATH

33

ages and sex, during the year 1898. (Stillbirths included.)

Ages of decedents, 1898.																							Classification No.
Ages in years under five.					Ages by five-year periods.																		
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 to +.	Unk.	
								1	1				2	1		5	4	5	12	11	17		103, 106
								1	1				2	1		5	4	5	12	11	17		
										1	1												111
										1	1		3	2	4	4	3		3				
							1	1	4	2	1	5	2	1	1	1					1		109, 110, 112
							1	1	4	2	1	5	2	1	1	1					1		
										2	1		2	2	2	3	4	5	2	3	1		113
										2	1		2	2	2	3	4	5	2	3	1		
								5	11	11	10	11	5	3	2	1				1			107, 108, 114, 115
								5	11	11	10	11	5	3	2	1				1			
							10	26	27	41	28	19											116- 118, 123, 124
							10	26	27	41	28	19											
							19	34	48	29	25	13	2										119, 120, 122
							19	34	48	29	25	13	2										
							9	24	9	11	10	3											121
							9	24	9	11	10	3											
21 7 14	3 1 2	1 1 1	1 1 1	2 1 1	28 10 18	2 1 1	3 1 2	3 1 2	3 1 2				2 1 1	2 2 1	2 2 1		3 2 2	5 1 3	2 1 1	7 4 3	4 2 2		125
1 1	1 1				2 1 1			1 1 1				1 1 1	4 3 1		2 2 1	5 4 1	9 4 4	13 6 3	14 8 8	15 7 7	25 18 7		
																	1		1	1			126
																	1		1	1			
																	1		1	1			127
																	1		1	1			
9 4 5		2 1 1	1 1 1	1 1 1	13 7 6	1 1 1	1 1 1		2 1 1	1 1 1	3 1 2		4 2 2	2 1 1	2 1 1	4 2 2	3 1 1	3 2 2	2 1 1	2 2 2	4 4 4		128
6 3 3	1 1 1				7 3 4		2 1 1									1 1 1	2 1 1	1 1 1	1 1 1	2 1 1	3 1 1	1 1 1	129
1 1 1					1 1 1	4 1 3	2 2 1	6 1 5	2 1 1	2 1 1	2 1 1	1 1 1	2 1 1	3 1 1	5 3 2	1 1 1	1 1 1	3 1 1	1 1 1	1 1 1			130
1 1 1					1 1 1			1 1 1	1 1 1			1 1 1				1 1 1		2 1 1	3 2 2				131
								1 1 1		2 1 1						1 1 1				1 1 1			133
9 7 2	2 2 2				11 7 4	3 3 1	2 1 1	2 2 1	2 1 1			2 1 1	1 1 1	2 1 1	2 1 2	5 4 1		2 1 1	1 1 2	1 1 2	3 1 2		132, 134, 136

35

[illegible]

CAUSES OF DEATH

37

ages and sex, during the year 1898. (Stillbirths included.)

Ages of decedents, 1898.																							Classification No.
Ages in years under five.					Ages by five-year periods.																		
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.	
51 32 19	37 26 11	38 27 11	36 22 14	22 15 7	184 122 62	89 72 17	85 70 15	127 114 13	127 113 10	97 87 10	83 73 10	106 92 14	91 82 9	64 58 6	60 48 12	41 34 7	51 37 14	50 36 14	37 22 15	54 35 19	102 50 52	7 7	
1 1	1 1		3 2 1		5 4 1	8 8	3 3	5 5	9 8 1	7 7	9 6 1	7 6 1	10 9 1	8 8	7 5 2	6 6 1	9 3 6	11 10 1	8 7	5 4 1	35 11 24		
										1 1	2 2	2 2	2 2	2 2	2 2	1 1				2 2	1 1		
			3 1 2		3 1 2	5 4 1	15 14 1	21 21 1	12 11 1	3 3	5 5	6 6	2 2	1 1	2 1 1	2 1	2 2			1 1	1 1		
								4 2	1 1	1 1		1 1		2 2	1 1	1 1							
									2 2	11 11	16 16	9 9	12 12	4 4	4 4	1 1	1 1						
	1 1				1 4	7 6 2	3 3	15 14	15 14	16 15	14 12	22 20	12 11	9 9	10 9	5 5	8 7	3 2	3 3	4 3	8 6	3 3	

TABLE III.—CONCLUDED.—*Causes of death in Michigan, by months,*

Classification No.	Causes of death, 1898.	Sex.	Total deaths, 1898.	Months of death, 1898.											
				Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	<i>C. Homicide</i>	Total.	39	2	2	3	-----	1	3	2	3	4	6	1	6
		Males.	21	2	2	3	-----	1	1	2	2	1	1	1	5
		Fem.	12	-----	-----	-----	-----	-----	2	-----	1	3	5	-----	1
152b	Homicide.....	Total.	33	2	2	3	-----	1	3	2	3	4	6	1	6
		Males.	21	2	2	3	-----	1	1	2	2	1	1	1	5
		Fem.	12	-----	-----	-----	-----	-----	2	-----	1	3	5	-----	1
153	Exhaustion, ca- chexia, debility.	Total.	313	38	42	26	25	15	26	24	16	20	32	23	22
		Males.	164	19	22	14	10	14	12	13	8	11	14	15	12
		Fem.	149	19	20	12	18	2	14	11	8	9	18	8	10
154	Fever, inflamma- tion.....	Total.	41	4	8	6	2	2	-----	4	2	6	3	3	1
		Males.	18	1	6	2	-----	1	-----	1	1	6	-----	-----	-----
		Fem.	23	3	2	4	2	1	-----	3	1	-----	3	3	1
155a	Dropsy.....	Total.	189	11	10	22	15	4	15	12	19	14	27	21	19
		Males.	82	10	3	11	8	-----	6	5	8	3	13	7	8
		Fem.	107	1	7	11	7	4	9	7	11	11	14	14	11
155b	Heart failure....	Total.	349	19	23	35	39	30	32	25	34	22	20	33	38
		Males.	181	11	13	15	22	16	12	10	18	16	11	14	23
		Fem.	167	8	9	19	17	14	20	15	16	6	9	19	15
156	Asphyxia, cyano- sis.....	Total.	11	1	1	2	2	-----	1	-----	-----	3	-----	-----	1
		Males.	3	-----	-----	1	1	-----	1	-----	-----	-----	-----	-----	1
		Fem.	8	1	1	2	1	-----	-----	-----	-----	3	-----	-----	-----
157	Sudden death....	Total.	11	2	-----	3	2	1	-----	-----	-----	-----	3	-----	-----
		Males.	8	2	-----	2	2	1	-----	-----	-----	-----	1	-----	-----
		Fem.	3	-----	-----	1	-----	-----	-----	-----	-----	-----	2	-----	-----
158	Abdominal tumor	Total.	33	6	4	3	3	4	1	2	4	1	3	2	-----
		Males.	4	1	1	-----	-----	-----	1	-----	-----	-----	-----	1	-----
		Fem.	29	5	3	3	3	4	-----	2	4	1	3	1	-----
159	Other tumors....	Total.	46	2	4	3	3	4	2	1	2	8	8	5	4
		Males.	18	-----	2	1	1	3	-----	-----	-----	4	4	2	1
		Fem.	28	2	2	2	2	1	2	1	2	4	4	3	3
161	Unknown or not specified causes.	Total.	354	26	24	34	32	33	24	18	26	34	33	37	33
		Males.	193	13	11	19	20	18	14	11	11	23	16	20	17
		Fem.	161	13	13	15	12	15	10	7	15	11	17	17	16

CAUSES OF DEATH

39

ages and sex, during the year 1898. (Stillbirths included.)

Ages of decedents, 1898.																							Classification No.
Ages in years under five.					Ages by five-year periods.																		
0.	1.	2.	3.	4.	0 to 4.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.	
4	1	---	---	---	5	---	1	4	4	3	---	8	2	1	1	2	---	---	---	1	---	1	152b
3	1	---	---	---	4	---	1	2	2	2	---	5	---	1	1	1	---	---	---	1	---	1	
1	---	---	---	---	1	---	---	2	2	1	---	3	2	---	---	1	---	---	---	---	---	---	
4	1	---	---	---	5	---	1	4	4	3	---	8	2	1	1	2	---	---	---	1	---	1	153
3	1	---	---	---	4	---	1	2	2	2	---	5	---	1	1	1	---	---	---	1	---	1	
1	---	---	---	---	1	---	---	2	2	1	---	3	2	---	---	1	---	---	---	---	---	---	
5	1	---	---	---	6	1	2	2	---	---	3	2	---	3	3	7	8	19	48	62	147	154	
3	---	---	---	---	3	1	1	1	---	---	1	1	---	1	1	6	1	7	25	32	84		
2	1	---	---	---	3	---	1	2	---	---	2	1	---	2	2	1	7	12	23	30	63		
9	6	1	---	---	16	4	1	1	---	---	---	3	1	2	1	1	---	2	---	4	5	---	155a
5	4	---	---	---	9	2	1	---	---	---	---	1	---	---	---	---	---	1	---	1	2	---	
4	2	1	---	---	7	2	---	1	---	---	---	2	1	2	---	1	---	1	---	3	3	---	
3	1	---	---	1	5	---	3	---	3	1	2	8	4	4	7	17	19	19	31	27	38	1	155b
1	---	---	---	1	2	---	1	---	1	1	1	2	1	2	1	4	10	8	17	13	18	---	
2	1	---	---	---	3	---	2	---	2	---	1	6	3	2	6	13	9	11	14	14	20	1	
28	3	---	---	---	31	1	3	2	4	4	2	3	6	10	17	17	15	24	37	58	114	1	156
14	3	---	---	---	17	---	2	2	2	1	1	1	5	3	6	7	10	12	14	30	67	---	
13	---	---	---	---	13	1	1	---	2	3	1	2	1	7	11	10	5	12	23	28	47	---	
1	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	157
5	---	---	---	---	5	---	---	---	1	2	---	---	---	---	---	1	---	1	---	1	---	---	
1	---	---	---	---	1	---	---	---	1	1	---	---	---	---	---	---	---	1	---	---	---	---	
4	---	---	---	---	4	---	---	---	1	1	---	---	---	---	---	1	---	---	---	1	---	---	158
3	---	---	---	---	3	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	
2	---	---	---	---	2	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	
3	---	---	---	---	3	---	---	---	1	---	---	---	---	---	---	---	---	---	1	1	3	---	159
2	---	---	---	---	2	---	---	---	1	---	---	---	---	---	---	---	---	---	1	1	3	---	
1	---	---	---	---	1	---	---	---	1	---	---	---	---	---	---	---	---	---	1	1	3	---	
244	3	---	4	---	251	3	4	---	4	4	5	8	7	4	7	10	3	8	5	10	19	2	161
128	2	---	2	---	132	2	2	---	3	2	2	2	5	4	5	6	3	6	3	7	7	2	
116	1	---	2	---	119	1	2	---	1	2	3	6	2	---	2	4	---	2	2	3	12	---	

TABLE IV.—Causes of death in Michigan, by counties,

Classification No.	Causes of death, 1898.	Counties—Alcona																
		State.	Alcona.	Alger.	Allegan.	Alpena.	Antrim.	Arenac.	Baraga.	Barry.	Bay.	Benzie.	Berrien.	Branch.	Calhoun.	Cass.	Charlevoix.	Cheboygan.
	ALL CAUSES.....	29,474	40	42	430	195	160	86	28	268	739	96	574	348	660	273	147	210
	<i>Stillbirths</i> (included in above.)	1,300	1	3	9	8	7	7	..	5	45	2	13	10	12	6	7	18
	GENERAL DISEASES.																	
	I. EPIDEMIC DISEASES.																	
1	Typhoid fever.....	499	..	..	4	1	1	3	..	2	9	4	5	5	18	7	1	1
1a	Typho-malarial fever.....	73	..	..	..	1	2	..	..	2	..	..	1	2	1	..	1	..
2	Typhus fever.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	Scurvy.....	16	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2
4	Smallpox.....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	Measles.....	131	..	1	3	..	..	..	..	..	2	1	5	1	5	1	2	5
6	Scarlet fever.....	91	..	..	1	..	..	..	..	1	1	..	1	..	..	..	3	2
7	Whooping cough.....	282	..	2	2	4	1	4	..	..	36	..	12	3	8	2	..	7
8a	Diphtheria.....	345	..	..	3	9	1	4	..	1	11	..	14	..	1	3	..	4
8b	Membranous croup.....	63	..	1	..	..	1	2	1	2	1	1	..	..	1	..	..	..
8c	Croup.....	48	..	..	2	1	..	..	..	..	1	..	..	..	..	1	..	1
9	Influenza.....	455	..	..	17	..	1	..	..	3	4	2	11	27	8	4	..	3
10	Miliary fever.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11	Asiatic cholera.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12	Cholera nostras.....	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13a	Chicken pox.....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13b	German measles.....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
13c	Mumps.....	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
13d	Trichinosis.....	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	II. OTHER GENERAL DISEASES.																	
14	Pyemia and septicemia.....	168	..	..	3	..	1	..	..	1	5	..	4	2	6	1	3	..
15	Glanders and farcy.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16	Malignant pustule.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17	Rabies.....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18	Relapsing fever.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
19-20	Malaria.....	175	..	..	6	1	2	1	1	4	3	..	3	3	5	2	..	..
21	Pellagra.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22a	<i>Tuberculosis—</i> of the lungs.....	2,153	6	1	29	13	10	6	1	13	58	8	52	24	41	17	4	15
22b	of the meninges.....	120	1	..	1	..	..	..	..	1	4	..	4	2	..	..	..	..
22c	of the peritoneum.....	120	..	..	1	..	..	..	..	..	1	1	5	2	2	2	1	..
22d	of the skin.....	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22e	of other organs.....	62	..	..	1	..	..	..	..	..	..	..	1	..	2	2	..	..
22f	general.....	370	1	1	5	2	2	..	..	2	13	2	9	4	4	2	..	4

CAUSES OF DEATH

41

during the year 1898. (Stillbirths included.)

to Keweenaw.

to Keweenaw.																										Classification No.	
Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	Gd. Traverse.	Gratiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	Isabella.	Jackson.	Kalamazoo.	Kalkaska.	Kent.	Keweenaw.		
204	62	280	26	273	206	363	171	504	48	206	236	353	384	728	353	442	433	117	34	201	625	679	58	1,672	30		
9	..	1	..	15	11	2	9	11	2	14	9	9	6	20	12	10	7	6	..	2	20	20	..	123	1		
2	1	8	..	8	4	4	1	4	..	3	4	9	2	9	4	18	6	1	..	3	5	8	..	38	..	1	
1	..	1	..	..	..	2	1	3	..	..	..	..	1	..	1	..	2	..	..	1	..	1	..	2	..	1a
..	2	
..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	
..	4	
7	6	6	..	1	..	..	..	2	6	2	1	1	..	..	..	..	3	..	4	..	4	..	5	
1	..	2	..	2	1	..	2	..	2	..	..	..	1	..	1	..	8	..	..	..	..	..	..	5	..	6
..	..	2	..	15	1	..	..	3	..	..	..	1	..	13	2	2	..	1	..	..	12	5	..	2	..	7
..	1	1	..	..	2	..	..	4	..	8	1	4	2	17	6	2	4	..	1	3	4	2	..	9	..	8a
1	1	..	..	4	..	..	..	..	..	..	..	1	..	1	..	2	..	6	..	..	8b	
..	1	..	..	1	..	2	..	..	..	3	1	..	..	1	..	..	..	..	..	..	..	8c	
1	..	4	..	1	..	11	2	8	..	1	5	3	12	4	4	12	10	3	..	1	12	9	2	18	..	9	
..	10	
..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	11	
..	12	
..	13a	
..	13b	
..	1	..	..	..	..	..	..	..	..	13c	
..	13d	
..	2	3	3	4	3	1	1	1	1	2	2	1	..	2	3	6	..	16	1	14
..	15	
..	16	
..	17	
..	18	
2	3	..	6	..	2	..	4	1	2	1	3	6	..	..	1	6	4	2	8	..	19-20	
..	21	
15	3	21	2	25	11	27	13	45	2	11	18	28	32	53	28	32	34	10	..	15	41	48	4	140	3	22a	
1	..	1	..	3	3	1	..	1	..	..	..	1	3	6	1	..	..	1	..	2	1	2	..	12	..	22b
1	2	2	2	..	1	..	1	1	2	1	2	..	..	1	1	..	1	2	1	..	8	..	22c	
..	1	..	..	..	..	..	22d	
..	1	2	..	1	..	1	..	1	1	3	1	1	1	1	..	..	5	..	..	3	1	22e	
1	..	4	..	2	4	8	2	8	1	1	4	1	5	7	2	8	5	2	1	2	10	8	1	28	1	22f	

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Alcona												
		State.	Alcona.	Alger.	Allegan.	Alpena.	Antrim.	Arenac.	Barnab.	Barry.	Bay.	Benzie.	Berrien.	Branch.
23	Scrofula	18												
24	Syphilis	55		1						2	2			1
25a	<i>Cancer—</i> of the mouth	32			1									1
25b	of the stomach or liver	494	1	11	2	1	2	1	9	9	3	7	7	17
25c	of the intestines or rectum	106	1	2	1					1		7	3	3
25d	of the uterus	155		1		1			3	3	1	1	6	3
25e	of the breast	83		1		1			3	3		1	2	2
25f	of the skin	41		1						1			1	4
25g	of other organs	410	1		7		1		6	20		6	8	15
26-27	Rheumatism	205		5		3	2		1	7	1	4	1	1
28	Diabetes	187		5					3	1	1	3	4	6
29	Exophthalmic goitre	7		1										
30	Addison's disease	20										2		1
31	Leukemia	19		1						1				1
32	Anemia, chlorosis	107			1				3			5	2	4
33	Other general diseases													
34	Alcoholism	47	2	2				1		3	1			
35-37	Chronic poisonings	10												
	LOCAL DISEASES.													
	III. DISEASES OF THE NERVOUS SYSTEM AND OF THE OR- GANS OF SENSE.													
38	Encephalitis	129	1	3	2					1	2	2		2
39a	{ Simple meningitis	417	1	4	4	1			1	14		4	3	6
39b	{ Cerebrospinal meningitis	254		4		3	1	1	9			2	2	5
42	Cerebral congestion, hemor.	1,144	1	15	2	3	1		18	18	5	28	14	36
43	Cerebral softening	94		1					4				5	5
44	Paralysis	789	1	11	4	2	1		12	6	5	22	10	23
45	General paralysis of insane	95										2	1	2
46	Other forms of insanity	67				1			2	2				1
47	Epilepsy	97		1	2	2	1	1	1	1		2		5
48	Convulsions	24			1							1		1
49	Convulsions of infants	516		2	3	1	1	1	3	15	1	11	5	6
50	Tetanus	20										1		1
40-41, 51-54	Other nervous diseases	317		5	1	3			3	8		7	2	14
	IV. DISEASES OF THE CIRCULATORY SYSTEM.													
55	Pericarditis	109		4	1				1			5	1	4
56	Endocarditis	74	1	1					2	1				1

CAUSES OF DEATH

43

by counties, during the year 1898. (Stillbirths included.)

to Keweenaw.																									Classification No.	
Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	Gd. Traverse.	Gratiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	Isabella.	Jackson.	Kalamazoo.	Kalkaska.	Kent.		Keweenaw.
																									2	23
		1				1		1			1		2	1			1						4		6	24
		1		1		1	1					2	5	1		1									1	25a
2		3		2	1	6	2	7		2	1	4	1	15	7	11	5	1	2	3	11	8			35	25b
		1					2	2			1		2	3		1			1		5	4		7	25c	
	1	1		2		4	1	6				3	4	2	1	3	1	2	1		7	7		13	25d	
							1	4			1	1	2	2	2	2	4	1			4	1		1	25e	
							2				1	2		2		1						2			25f	
		3	4	6	6		18	1	2	3	3	8	8	8	4	9	10			3	7	9	1	27	25g	
		1				4	1	5		1	2	1	3		4	3	6			2	3	9	1	10	26-27	
1	1	4				1	1	3			3	1	8	3	3	2		2		2	4	5	2	6	28	
													2												29	
		2			1			1							1			1				1			30	
							1	1				2	1	2						1	1	1		1	31	
2				1		1	1	2				3	3	1	2		1			2	1	4		8	32	
																									33	
1	1		1								1	1		2	1						2	1		1	34	
						1							1											1	35-37	
		1	1		1	1	3	2				5	1	1	5	4	2	1		1	5	2		9	38	
1	2	8		11	4	1	1	6	1	5	5	5	4	11	6	2	1	1		3	7	12	1	25	39a	
1	1	1		2	3	1	1	4		10		2		4	1	1	2	1	1	2	11	9	1	17	39b	
6	1	17	1	4	2	13	5	25	1	3	6	17	20	20	12	16	22			12	27	36	1	74	42	
		2				3		2		1		1	2		1		2	1			4	7		2	43	
	2	11	3	2		21	6	18	1	1	10	19	22	1	8	20	20			2	28	25		42	44	
							1	4			9		2			1	3				4	27			4	
		2			1		1	1		1	4	1				1	1	2		1		2		2	46	
						1					4	1	1	1	1	2	1	1			1	11	1	4	47	
						1							2	1					1					2	48	
9	1	2	1	6	5	4	2	2	2	8	7	3	1	14	4	7	6	6		4	9	1	2	21	49	
		1				1		1					1											3	50	
2	1	4			1	7		9		1	2	9	4	7	3	7	3	2		4	5	9		23	40-41, 51-54	
1		3				1		1			2				2	1	1	1		1	4	2	1	9	55	
		1			3		2		1				1	3		2	1				3	4		6	56	

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Alcona												
		State.	Alcona.	Alger.	Allegan.	Alpena.	Antrim.	Arenac.	Baraga.	Barry.	Bay.	Benzie.	Berrien.	Branch.
57	Organic heart diseases.....	2,016	4	1	40	11	14	8		39	44	7	39	30
58	Angina pectoris.....	143			4		1			2	3		5	2
59	Diseases of the arteries.....	74	1		2								1	2
60	Embolism.....	19			1									
61	Varices, hemorrhoids.....	3												
62	Phlebitis.....	12											1	1
63	Lymphangitis.....	2												
64	Other lymphatic diseases.....	10											1	
65	Hemorrhage.....	60			2		2	1			1		2	3
66	Other circulatory diseases..	18				1					1			1
	V. DISEASES OF THE RESPIRATORY SYSTEM.													
67	Diseases of the nose.....	2											1	
68	Diseases of larynx and thyroid.....	43			1	1				1	2		2	1
69	Acute bronchitis.....	395			6	10	6			2	17		4	2
70	Chronic bronchitis.....	248	1		4	2	1	1		2	8		5	2
71	Broncho-pneumonia.....	242		1	3		2			1	5	1	1	2
72	Pneumonia.....	1,805	3	3	23	12	9	2	3	10	42	5	34	25
73	Pleurisy.....	107			3					1	2		3	7
74	Congestion of lungs.....	159			6	2					5		4	1
75	Gangrene of lungs.....	5					1			1				
76	Asthma and emphysema.....	111			2	1				1	5		1	2
77	Other respiratory diseases...	119			4		1			2	2		2	1
	VI. DISEASES OF THE DIGESTIVE SYSTEM.													
78	Diseases of the mouth.....	31			1						1			
79	Diseases of pharynx and esophagus.....	36			3			1					2	1
80	Ulcer of the stomach.....	61								1	4		2	2
81	Other diseases of stomach...	423			7	3	3	1	1	3	8	1	8	7
82	Infantile diarrhea, gastroenteritis.....	1,782	2	2	18	27	22	5	4	7	56	6	22	9
83	Diarrhea and enteritis.....	314	1	1	4	3	1	3	1	7	4	3	7	3
84	Dysentery.....	150			2		2	1		2	2		3	2
86	Hernia and intestinal obstructions.....	254	1	1	3			2		4	7	1	3	2
85, 87	Other diseases of the intestines.....	117						2			4		5	2

CAUSES OF DEATH

45

by counties, during the year 1898. (Stillbirths included.)

to Keweenaw.																				Classification No.
Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	Gd. Traverse.	Gratiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	
9	3	30	1	13	5	40	9	35	3	3	32	32	44	23	25	54	45	5	1	157
1	4					2	1	4	1			2	2	2		3	4			58
								4					2							59
												1		1						60
												1								61
												1	1							62
												1		1						63
	1							1					1							64
2	2				1	1		1				1	1	1	1		2	1		65
													1							66
																				67
1					1	1								2						68
4	2	11			2	2	5	1	6	1	1	1	1	20	4	1	2		4	69
1	2	1	3		6	1	10		1				3	4	4	5	2		2	70
7	2	3	5	8	3		2		1	3	1		14	2		1	2		1	71
12	1	19	15	12	36	18	25	3	14	11	20	14	36	22	26	16	7	2	12	72
1	1	1			3		2				1	2	4	1	2	4	1		4	73
	3	1	1	1	2	1	3			2	4	1	4	1	5	1	1		1	74
													1							75
2	4										1	1	2	5		3	2		1	76
1	1	3		1	3	1	3			2	2	1	1	2		4	1		3	77
1			1					1						1	1	3			4	78
	1	1				2		1					1				4			79
					2		1						2	2	1	1	1			80
3	2	3	3	2	1	10	3	9		5	2	5	8	8	1	7	12	2	3	81
22	7	10	6	16	24	6	16	22	5	23	11	17	11	99	24	19	20	10	1	82
2	1	5		2		5	2	7	1		4	2	9	6	7	8	4	2	1	83
1		1	1		2	1	4			4	3	6	1	1	2	3			1	84
3	1		4	3	4		3		2	2	3	1	4	5	1	4	2		4	86
1	1	2	1		1		2	1	1	1	3	1	5	1	1	1			1	85, 87

CAUSES OF DEATH

49

by counties, during the year 1898. (Stillbirths included.)

to Keweenaw.

Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	Gd. Traverse.	Gratiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	Isabella.	Jackson.	Kalamazoo.	Kalkaska.	Kent.	Keweenaw.	Classification No.
1	1	1		1	1	1							3					1				1		2	{ 132, 134-136	
		2		2	1	3	1	2		1		1	2	1	4	3	1	1		2	1	1	1	5		137
6	1	1	1	9	7	7	5	2	1	14	2	5	3	52	5	7	7	2			10	10	3	51	138a	
8	1	1		1	10	3	1	5		4	2	1	2	20	9	5	2	3	1		6	10	1	18	138b	
					1										1									1	139	
				1				1						1				1			1			1	140	
7	2	6		4	2	9	13	15	2		9	9	11	6	10	11	12	5		2	13	8	1	42	141	
				1									1			1	1				1	2	1	8	{ 142a 142b 142c 142d 142e 142f 142g 142h 142i	
														1	3		1	1				2		1		142c
											1					1						1		2		142e
					2			1				1					3				1	2		2		142f
						1				1	1															142g
																	1									142h
								1																	142i	
2		4		2	2		1	5				3	3	5	1	1	1				4	6		4	143	
									1					1					1	1				1	144	
				2		2		4			1	2	2		1	1	1	1			1	1		2	145a	
															2										145b	
					9					14				15						1				1	145c	
1		1		5	1	2	2	5		1	1			4		2	1				5	3	2	3	145d	
1					1	1	1	1					2		1		1	1			3	5		2	145e	
					1	4	1		1	1		1	2	1	3	3	3	2			2	6		1	146a	
					1		1					1		2	1				1		1			1	146b	
																									146c	
		1											1							1				1	{ 147a 147b	
					1		1							1												147b
8		1		5		1	3	6			1	2	4	11	1	5	1				4	5	2	1	8	148
																									149	
					2			1													1				150	

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	State.	Counties—Alcona															
			Alcona.	Alger.	Allegan.	Alpena.	Antrim.	Arenac.	Baraga.	Barry.	Bay.	Benzie.	Berrien.	Branch.	Calhoun.	Cass.	Charlevoix.	Cheboygan.
151	Other accidental poisons.....	75	—	—	1	—	—	—	—	2	—	—	3	2	1	2	—	
152a	Other accidents.....	406	1	3	2	4	8	1	—	3	8	2	4	5	14	2	4	4
152b	<i>C. Homicide—</i> Homicides.....	33	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—
XV. CAUSES ILL-DEFINED.																		
153	Exhaustion, cachexia de- bility.....	313	—	—	4	3	—	—	1	—	9	—	5	4	9	—	1	6
154	Fever, inflammation.....	41	—	—	2	—	1	—	—	—	1	—	—	—	2	—	—	—
155a	Dropsy.....	189	1	—	3	—	1	1	—	1	7	1	4	2	2	4	2	1
155b	Heart failure.....	349	1	—	9	3	1	—	1	6	7	2	9	6	8	1	1	2
156	Asphyxia, cyanosis.....	11	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—
157	Sudden death.....	11	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
158	Abdominal tumor.....	33	—	—	—	—	1	—	—	—	—	—	2	—	1	—	—	1
159	Other tumors.....	46	—	—	—	—	—	—	—	—	1	—	1	—	2	—	—	—
161	Unknown or not specified causes.....	354	2	4	1	5	2	1	1	2	2	3	7	1	3	2	3	9

CAUSES OF DEATH

51

by counties, during the year 1898. (Stillbirths included.)

to Keweenaw.																									Classification No.	
Chippewa.	Clare.	Clinton.	Crawford.	Delta.	Dickinson.	Eaton.	Emmet.	Genesee.	Gladwin.	Gogebic.	G'd Traverse.	Graiot.	Hillsdale.	Houghton.	Huron.	Ingham.	Ionia.	Iosco.	Iron.	Isabella.	Jackson.	Kalamazoo.	Kalkaska.	Kent.		Keweenaw.
		1		1				3						1	1	1	2		2		1	3	2	1	3	151
3		1	1	6	8	2	2	5	1	4	5	5	7	17	6	5	8		2		1	12	14		17	152a
								1				2	1	1		2					1	1		1	152b	
	2	3		4	1	3		8	1	1	2	5	4	6	6	6	7	3	1	4	4	6		15	153	
				1						1				1	1		1	1			2		1	4	154	
2	1	1	1	1		3	2	1	1		2	2	2	1	3	3	7	2		3	2	2		9	155a	
	3	13		1		4	2	6	1	3	2	8	6	3	5	7	15	3	1	5	2	16	2	9	155b	
							2							1											156	
											1			1	2				1						157	
		1				1		3													1			3	158	
			1	1	1	1	1	1			1				1	1				1	2	1		3	159	
9	1	1		9	6			4	1	10	6	2	1	14	13	1	3	1	3	3	2	1		4	161	

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Lake												
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Marquette.	Mason.	Mecosta.	Menominee.
	ALL CAUSES.....	49	343	128	643	253	15	75	465	308	469	242	244	261
	<i>Stillbirths</i> (included in above)	1	6	10	9	4	4	4	9	20	41	8	12	27
	GENERAL DISEASES.													
	I. EPIDEMIC DISEASES.													
1	Typhoid fever.....		5	1	8	8			8	6	11	2	6	3
1a	Typho-malarial fever.....				1				5			1		
2	Typhus fever.....													
3	Scurvy.....										1			
4	Smallpox.....													
5	Measles.....			4	1			1	2	5				3
6	Scarlet fever.....				2				9			10		
7	Whooping cough.....		3		2	1			10	5	3		4	3
8a	Diphtheria.....	1	2	4	2	1			8	1	14	2	3	4
8b	Membranous croup.....								2	1	1			1
8c	Croup.....								1		1	1		
9	Influenza.....	1	2	4	21	2		1	1	2	2		7	3
10	Miliary fever.....													
11	Asiatic cholera.....													
12	Cholera nostras.....													
13a	Chicken pox.....										1			
13b	German measles.....													
13c	Mumps.....													
13d	Trichinosis.....													
	II. OTHER GENERAL DISEASES.													
14	Pyemia and septicemia.....	1	2		3	2			3	1	3	1	1	4
15	Glanders and farcy.....													
16	Malignant pustule.....													
17	Rabies.....													
18	Relapsing fever.....													
19-20	Malaria.....		3	1	6	4		2	3	1		1	5	
21	Pellagra.....													
22a	<i>Tuberculosis—</i> of the lungs.....	7	22	17	34	14	3	7	37	16	33	17	15	17
22b	of the meninges.....				3			2	2	1	3			
22c	of the peritoneum.....		3	1	4	1			4		3	1	2	3
22d	of the skin.....													
22e	of other organs.....	1	1		1				3	1	1		1	1
22f	general.....		3		8	8		2	7	10	5	5	6	2

CAUSES OF DEATH

53

by counties, during the year 1898. (Stillbirths included.)

to Wexford.																									Classification No.
Montcalm.	Montmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Oseola.	Oscoda.	Otsego.	Ottawa.	Presque Isle.	Roscommon.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	Tuscola.	Van Buren.	Washtenaw.	Wayne.	Wexford.	
417	20	435	189	625	251	57	18	182	2	62	480	45	5	899	396	76	410	709	292	369	421	585	5,269	147	
10	1	20	5	10	6	3	1	10	2	18	49	10	3	7	36	5	14	11	8	422	11				
10	1	9	6	10	8	1	3	4	4	17	13	6	15	4	7	15	7	76	5	1					
2	4	1	1	1	1	1	1	1	5	2	2	8	1	2	9	1	2	9	1	1a					
1				1							3											4	3		
																						1	4		
	4				13	1					7	7	5	1	1	4	2	1	5		2	17	1	5	
2	2								2					14	3	1	2	6	5	2	2	64	1	7	
2	1	1	3					6		17	4	4	5	13	6		3	7	2	76	1	8a			
4	9	10	1	5	1			2	1	2	3			4	2	1						16	8b		
1	1	2			2			2						1				1			2	18	8c		
8	4	1	8	5	3			5		13	8	12		9	6	14	6	7	15	63	6	9			
																									10
																									11
															1										12
																									13a
																									13b
																		1							13c
				1																		3			13d
4	3	2	2	2	1			1		1	4	3		4	4		1	4	6	20	1	14			
																									15
																									16
																							1		17
																									18
5	1	2	5						1	5	1	2	2	1	5	3	2	1	4	18	2	19-20			
																									21
29	2	40	11	58	23	2	2	13	2	37	4	64	34	1	38	45	21	13	27	47	376	8	22a		
1	1		3					1						1	3	1	1	9	2	2	1	4	26		22b
1	2	2	2	1				1	1	4		5	1	1	4	6		7	2	2	10				22c
																									22d
	2								1		1	1	1		2						4	9	1	22e	
6	5	2	7	4					9		12	2		4	13		6	3	5	57	2	22f			

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Lake															
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Marquette.	Mason.	Mecosta.	Menominee.	Midland.	Missaukee.	Monroe.
23	Scrofula			2									1				1
24	Syphilis					1				2			1				1
25a	<i>Cancer—</i> of the mouth		1		1	1						2	1				1
25b	of the stomach or liver		6		24	5	1	6	1	10	1	1	1	8			5
25c	of the intestines or rectum				2		1	1	1	1	1	1	1	1			1
25d	of the uterus		2		8	2	1		1		1	2	2	1			1
25e	of the breast		4		1	2		1	1	1					1		2
25f	of the skin				2			1		1						1	1
25g	of other organs		4	1	11	3		6	5	6	2	3	2	1	1		2
26-27	Rheumatism	1	3	1	4	1		3	3	1	2	4	1				4
28	Diabetes		4	1	4	4	1	3	2	3	3	1	1	1			2
29	Exophthalmic goitre													1			1
30	Addison's disease		1								2						
31	Leukemia								1								
32	Anemia, chlorosis		2	1	3	2		6	1				1	1	2		1
33	Other general diseases																
34	Alcoholism							1	2	2				1			
35-37	Chronic poisonings				1												
	LOCAL DISEASES.																
	III. DISEASES OF THE NERVOUS SYSTEM AND OF THE OR- GANS OF SENSE.																
38	Encephalitis			1		1	2			2	1	3	1	2	1		1
39a	Simple meningitis	1	3	2	7	2	2	7	4	13	3	3	6				4
39b	Cerebrospinal meningitis		2		2	1	2	4	2	4	3	3	1	2			6
42	Cerebral congestion, hemor. ..	19	3	35	4			19	5	12	5	6	10	2	2		17
43	Cerebral softening		1	1	2	1		2					1		1		
44	Paralysis	1	12	3	27	14	1	15	3	2	5	2	3	1	1		17
45	General paralysis of insane ..		4		2								1				
46	Other forms of insanity		1		2	1	1										2
47	Epilepsy		3		4	3			1	1			2	1			1
48	Convulsions		1				1	2		1				1			2
49	Convulsions of infants	1			10			8	11	6	2	2	10	2			1
50	Tetanus											1			1		
40-41, 51-54	Other nervous diseases	2	7	1	10	6	1	1	3	8	4	1			4		9
	IV. DISEASES OF THE CIRCU- LATORY SYSTEM.																
55	Pericarditis			4	1	2		1	1		1				2	2	1
56	Endocarditis				2			2	1	2		1					2

CAUSES OF DEATH

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by counties, during the year 1898. (Stillbirths included.)

to Wexford.

	Montcalm.	Montmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Osceola.	Oscoda.	Osego.	Ottawa.	Presque Isle.	Rosecommon.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	Tuscola.	Van Buren.	Washtenaw.	Wayne.	Wexford.	Classification No.
			1									2			1	1			1							23
				1											1	1		1				1	1	19		24
				1											1	1			1					4		25a
9		10	2	8		2	2	2				6			24	3	1	10	14	9	11	15	11	80		25b
2		1	1	1	1	1	1					2			11			3	2		2	2		17		25c
2		4	1	2					1			2			3			2	3	3	3	3	2	23		25d
1			1			1			2						2	1		2	2	2	1		2	10		25e
1			1	2	1	1												2	3				3	4		25f
4	1	7	1	12	8	1			4			5			16	2	2	5	7	7	8	6	11	55	2	25g
7		5	3	4	4						1	3			5	4	1	3	10	3	4	4	6	22		26-27
4		2	2	4	2							6			6	2		6	3	1	5	1	6	29	1	28
																								2		29
															2				1	1				2		30
																				1			1	2		31
2		1		4			1	1							3	3	2	1	4	1	1	2	1	11	1	32
																										33
					3										1				2	2	1	2	1	7		34
				1								1			1		1	1						2		35-37
																	1									
2		3	1	3	2			1				5	1	1	6		1	3	5	2	2	3	6	8		38
3		5	3	7	4							6			15	5	2	7	11	3	1	2	11	106		39a
2		1	1	1	1	1		3	2	4					13	7		4	6	3	4	2	2	55		39b
27		24	5	25	7			7	1	17	2				40	18	2	16	27	16	18	17	37	194	4	42
2		2		5								2			4	2		4	3	4	1	2	1	9		43
17		9	5	16	6	4		2	2	15					21	4	1	15	21	9	11	21	19	97	1	44
				9											2			1	2	1		1	3	12		45
				13	1														2		1	1		15		46
1				2				1				1			8	2		1			4	2		14		47
																	1		2			1		2		48
6		7	2	8	1	1	3					11			22	5	1	4	13	3	6	4	6	171	5	49
		2															1			1			1	4		50
3		2	1	11	1			1	1	4					19	2	2	5	2	3	4	3	5	40		40-41, 51-54
2		5		4	2							2			1	2		2	8	2	1	2	2	10	1	55
1															1	1	1		1	3	1		2	19		56

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Lake															
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Marquette.	Mason.	Mecosta.	Menominee.	Midland.	Missaukee.	Monroe.
57	Organic heart diseases.....	3	35	5	61	24	1	3	32	14	21	12	18	8	9	2	3
58	Angina pectoris.....		2		5	2			1		1		2	2	2		3
59	Diseases of the arteries.....		1		1	1			1								2
60	Embolism.....																
61	Varices, hemorrhoids.....																
62	Phlebitis.....								1	1							
63	Lymphangitis.....																
64	Other lymphatic diseases.....		1			1											1
65	Hemorrhage.....									1	2	2					2
66	Other circulatory diseases.....		1			1						1					
	V. DISEASES OF THE RESPIRATORY SYSTEM.																
67	Diseases of the nose.....																
68	Diseases of larynx and thyroid.....									1	1		1				1
69	Acute bronchitis.....		1	2	9			1	4	8	24	2	2	5	2		5
70	Chronic bronchitis.....		3		6		1		5		4	3	5		2		4
71	Broncho-pneumonia.....		2	1	6	2		1	1	5	11			5	1		1
72	Pneumonia.....	3	23	5	31	22	1	5	20	14	23	19	13	18	12	4	31
73	Pleurisy.....				7				5		1			1	1		2
74	Congestion of lungs.....		2		4	1			2	3	1						4
75	Gangrene of lungs.....																1
76	Asthma and emphysema.....	1	1		3		1	1	6		1	2	1	1		1	1
77	Other respiratory diseases.....		2	1	4	5			1		2	1	2				2
	VI. DISEASES OF THE DIGESTIVE SYSTEM.																
78	Diseases of the mouth.....		1							1							
79	Diseases of pharynx and esophagus.....			1					1			1					1
80	Ulcer of the stomach.....				2				1	1							3
81	Other diseases of stomach.....	1	2	4	11	4	3	1	4	4	2	3	2	4	7	1	2
82	Infantile diarrhea, gastro-enteritis.....	3	14	3	22	9	1	7	20	19	32	13	20	34	17	4	17
83	Diarrhea and enteritis.....	1	6	1	12	2		1	6	3	4	4	2	3	1		9
84	Dysentery.....		5		3	2		1	2					1		2	5
86	Hernia and intestinal obstructions.....		1		6				3	3	3	2	2		2		6
85, 87	Other diseases of the intestines.....	2		1	1	1		1	1			1			1		2

CAUSES OF DEATH,

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by counties, during the year 1898. (Stillbirths included.)

to Wexford.																									Classification No.
Montcalm.	Montmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Oseola.	Oscoda.	Otsego.	Ottawa.	Presque Isle.	Roscommon.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	Tuscola.	Van Buren.	Washtenaw.	Wayne.	Wexford.	
27	23	8	48	19	2			10		1	23	2		59	21	4	27	48	35	35	39	50	265	8	57
1	4		5	1	1					2	2	1	5				2	3	2	1	5	4	14	2	58
	1		3							2	2						3	4		1		4	19		59
	1		1							1			2					1	1		1	1	3		60
																	1						1		61
			1	1							1							1	1				1		62
																									63
																						1			64
1		1						1						3					1	1			11		65
	1																1	3				2	1		66
																							1		67
		2												2	1		1	2	1			1	12		68
2	4		5	1	3			5		3	13			8	4	1	3	5	2	3	2	5	91	2	69
8	1	5	5	1				1		2	5			4	4		4	6	3	2	3	3	56		170
5	6		1	2	3			1		1	2			6	3	2	4	5	1	4	3	1	46		71
14	2	21	13	37	20	7	1	9		2	24			43	24	4	33	39	20	31	24	38	350	7	72
	3	3	3	1							3			3	1	1		1			2	2	15		73
3	4	2	2	1							3			4	1	1	5	2	4	4	3	1	20		74
																							1		75
1			3								3	1			1		3	5	2		2	2	24		76
3	4	1	1		1						3	1			1		4	3	2	1	2	2	14		77
											1	1		1	1								7	1	78
		2	2											1	2								8		79
3	1	2	2							1	1			1		1	1	2		1		1	7		80
4	1	5	2	15	1	1		2		1	7			16	10	1	5	10	6	7	2	6	56	2	81
17		22	13	25	27	5	2	12		7	23	2	1	32	24	3	22	47	8	22	27	16	424	12	82
7		3	3	10	2			4			10	1		4	3		3	8	2	4		7	28		83
2		4		7	1			1		3	2			6	1		1	2		1	2	4	15		284
4		4	3	13	2			1			3			5	5	1	6	9		3	2	3	47		86
2		2	1	1	2	1		1			3			6			1	2	2		1	4	23	1	85, 87

CAUSES OF DEATH

by counties, during the year 1898. (Stillbirths included.)

[illegible]

TABLE IV.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Lake															
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Marquette.	Mason.	Mecosta.	Menominee.	Midland.	Missaukee.	Monroe.
132. 134-136	Other diseases of locomotor system.....		1		1							1			1		
	XI. MALFORMATIONS.																
137	Malformations.....	1	1	1	4					2	3		4	1	1	1	3
	XII. DISEASES OF INFANCY.																
138a	Congenital debility.....		5		11	4			5	10	15	4	1	7	5	2	9
138b	Premature birth.....	2	4	10	8	2			9	7	9	1	4	8		1	2
139	Want of care.....																
140	Other diseases of infancy.....					1				1	1						
	XIII. DISEASES OF OLD AGE.																
141	Senile debility.....		10	4	25	9			11	4	4	8	6	3	3		4
	XIV. VIOLENCE.																
	<i>A. Suicide—</i>																
142a	Poison.....							1	3			1					
142b	Asphyxia.....																
142c	Strangulation.....		2		2		1		3	1		1					1
142d	Drowning.....					1											
142e	Firearms.....		1		1				3								
142f	Cutting instruments.....										1	1					
142g	Fall from height.....																
142h	Crushing.....																
142i	Other methods.....	1															
	<i>B. Accidents—</i>																
143	Fractures.....		2	1	7				2		5	1	1	2			3
144	Dislocations.....		1						1							1	
145a	Gunshot.....	1	1		2	2	2	2	3	1	2	1	3	1			
145b	Lightning.....								2		1						
145c	Mining accidents.....										15						
145d	Railroad accidents.....		2		3		1	2	2	7	1				2		1
145e	Vehicles and horses.....			2	6	1			1		1	1	1			2	
146a	Fire (burn).....				5				2	3	2	2		1	3	1	1
146b	Hot liquid (scald).....									1							
146c	Corrosive substances.....																
147a	Sunstroke.....											1					
147b	Freezing.....	1	1	1								1					
148	Accidental drowning.....				5	2	2	3	7	2	7	5	3	2			3
149	Starving.....																
150	Noxious gases.....										1			1			

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to Wexford.

to Wexford.																								Classification No.	
Montcalm.	Montmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Oseola.	Oscoda.	Otsego.	Ottawa.	Presque Isle.	Roscommon.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	Tuscola.	Van Buren.	Washtenaw.	Wayne.		Wexford.
								1			1			3					1			1	6	132, 134-136	
3			1		1			2			3			5	5	1	4	1	4	1	5	25	3	137	
10	8	1	9	3	1	1	5	4	9	1				25	8	5	2	19	2	3	3	5	230	8	138a
5	6	1	5				2	1	4					10	8	4	3	4	4	6	4	5	92	4	138b
				1						1					1		1	1					1		139
1										1					1			1			1		3	1	140
11	16	4	16	5	1		9		12	7	1	18	12	2	4	18	3	7	9	15		107	3	141	
1	2	1							2					3	2	1	1			1	2		13		142a
																									142b
2				3		2			1	1				7	1							1	5		142c
	2													2									5		142d
1				2															1			1	9		142e
	1			1			1		1				1			1							3		142f
																							1		142g
																									142h
														1	1							1	1		142i
				6		1	1	1	2				5	1	3		1	1	2	3		34	2	143	
1														2						1			1		144
	2	1	1	2					1				2				2		2	3	3	6			145a
	1																			1			1		145b
														1		1									145c
1	3		2		1		4	2	1				9		1	2	1	2		1	7	33	1		145d
4		2	1	1					1				3				1	3	2	5	1	14			145e
1	4		1	1	1				2				2			4	2	1			1	2	11		146a
			1		1											1	1					2			146b
					1	1															1	1			146c
					1								1									5	1		147a
			1											1	1										147b
3	7		4	2				7	4				12	1	1	1	8	2	2	3	3	32	2	148	
																									149
															1										150

TABLE IV.—CONCLUDED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Counties—Lake												
		Lake.	Lapeer.	Leelanau.	Lenawee.	Livingston.	Luce.	Mackinac.	Macomb.	Manistee.	Marquette.	Mason.	Mecosta.	Menominee.
151	Other accidental poisons	1	1		1				2				1	
152a	Other accidents.....	1	7	1	9	2	1	2	1	4	5	8	4	2
152b	<i>C. Homicide—</i> Homicides		2	1				1		1	1	3		1
XV. CAUSES ILL-DEFINED.														
153	Exhaustion, cachexia de- bility		5	1	8	5			4	2	3	2	2	1
154	Fever, inflammation.....		2			1			2		1			
155a	Dropsy		4			5			2	2		2	2	
155b	Heart failure	1	6	2	6	10			5	2		3	3	3
156	Asphyxia cyanosis.....												1	
157	Sudden death.....					1							1	
158	Abdominal tumor.....		1		1	1					1		1	
159	Other tumors					1			1		1		3	
161	Unknown or not specified causes.....	3	2	9	4			2	6	31	3	16	1	12

CAUSES OF DEATH

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by counties, during the year 1898. (Stillbirths included.)

to Wexford.																			Classification No.
Montcalm.	Montmorency.	Muskegon.	Newaygo.	Oakland.	Oceana.	Ogemaw.	Ontonagon.	Oscoda.	Oscoda.	Ottawa.	Presque Isle.	Roscommon.	Saginaw.	Sanilac.	Schoolcraft.	Shiawassee.	St. Clair.	St. Joseph.	
2	1	1	1	3	3	3	3	2	2	1	1	2	2	1	1	1	1	1	151
7	7	7	10	5	3	5	2	2	2	1	1	10	7	2	6	11	4	3	152a
										2			3					1	152b
11	3	1	12	2		5				8	1	14	11		6	6	4	1	153
										1					1		2	1	154
3	2	4	8	5	1	1				9	2	3	3			2	5	1	155a
7	5	2	16	2	1	1				9		7	9		6	8	2	7	155b
																	2		156
	1												1		1				157
		1	1							3		1			1		1		158
2	2	1		1								2	2					1	159
5	2	6	5	3	1	1	4	2	2	10	7	8	5	3	3	7	5	1	161

TABLE V.—Deaths in Michigan, by months, cities and sex, during the year 1898.
(Stillbirths included.)

Cities.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
ALL CITIES.	Total.	12,704	1,018	944	1,133	1,202	1,079	924	1,040	1,117	1,115	1,052	985	1,095
	Males.	6,684	536	501	592	603	553	499	570	583	590	555	536	576
	Fem.	6,004	482	443	538	595	524	425	470	532	524	496	448	517
	Unk.	16			3	4	2			2	1	1	1	2
Adrian.	Total.	135	11	10	23	12	12	7	13	8	16	8	6	9
	Males.	58	4	2	5	5	7	6	7	4	5	5	3	5
	Fem.	77	7	8	18	7	5	1	6	4	11	3	3	4
Albion.	Total.	53	6	3	7	6	4	2	4	1	4	4	4	8
	Males.	24	2	3	3	2	2	1	2		2	2	2	3
	Fem.	29	4		4	4	2	1	2	1	2	2	2	5
Alpena.	Total.	159	16	10	18	5	16	16	10	10	21	9	9	19
	Males.	71	7	3	6	2	8	6	4	4	11	2	5	13
	Fem.	88	9	7	12	3	8	10	6	6	10	7	4	6
Ann Arbor.	Total.	192	17	15	18	24	16	15	11	17	19	12	9	19
	Males.	95	8	7	12	9	9	9	5	12	10	4	6	4
	Fem.	97	9	8	6	15	7	6	6	5	9	8	3	15
Au Sable.	Total.	17	2	1	3	1		1		2	2		3	2
	Males.	7	1		1					1	1		2	1
	Fem.	10	1	1	2	1		1		1	1		1	1
Battle Creek.	Total.	259	21	23	27	22	11	20	27	19	28	22	21	18
	Males.	132	12	8	10	13	3	10	15	12	18	12	12	7
	Fem.	126	9	15	17	9	8	10	12	6	10	10	9	11
	Unk.	1								1				
Bay City.	Total.	312	27	24	25	26	30	34	21	26	34	12	23	30
	Males.	152	15	13	14	9	13	19	13	14	14	5	8	15
	Fem.	160	12	11	11	17	17	15	8	12	20	7	15	15
Belding.	Total.	28	2	3	3				2	2	4	3	3	6
	Males.	10	1	1	2				1	1	1	1		2
	Fem.	18	1	2	1				1	1	3	2	3	4
Benton Harbor.	Total.	73	4	2	4	9	5	5	9	5	7	6	8	9
	Males.	38	4		3	3	3	3	4	3	4	3	5	3
	Fem.	35		2	1	6	2	2	5	2	3	3	3	6
Bessemer.	Total.	58	6	3	6	2	4	5	6	3	5	8	4	6
	Males.	26	3	2	3	1	2	4	5	2	3	4	1	6
	Fem.	22	3	1	3	1	2	1	1	1	2	4	3	
Big Rapids.	Total.	72	6	4	9	7	6	3	6	7	6	7	5	6
	Males.	48	3	3	7	5	6	3	3	4	2	5	3	4
	Fem.	23	3	1	2	1			3	3	4	2	2	2
	Unk.	1				1								
Cadillac.	Total.	55	5	4	3	4	5	7	3	4	8	6	2	4
	Males.	30	3	3	2	2	1	5	2	1	5	2	1	3
	Fem.	25	2	1	1	2	4	2	1	3	3	4	1	1
Charlotte.	Total.	54	5	3	5	4	5	6	3	2	5	7	1	8
	Males.	34	2	3	5	2	1	3	1	1	5	5		6
	Fem.	20	3			2	4	3	2	1		2	1	2
Cheboygan.	Total.	140	11	13	15	13	19	11	11	16	7	11	5	8
	Males.	71	6	6	8	4	12	5	6	9	4	5	2	4
	Fem.	69	5	7	7	9	7	6	5	7	3	6	3	4
Clare.	Total.	16	2		1	2	1	2	1		4	3		
	Males.	9	2		1	1	1	1			1	2		
	Fem.	7				1		1	1		3	1		
Coldwater.	Total.	78	7	6	5	3	6	7	8	7	6	7	6	10
	Males.	43	6	2	3	1	4	5	4	3	4	3	3	5
	Fem.	35	1	4	2	2	2	2	4	4	2	4	3	5
Corunna.	Total.	21	1	2	3	1	1	2	1		2	1	3	4
	Males.	13	1	1	1	1	1	2			2	1		3
	Fem.	8		1	2				1				3	1
D.	Total.	4,355	326	299	363	418	389	299	427	432	362	373	325	342
	Males.	2,249	177	160	185	212	182	173	233	205	185	196	181	170
	Fem.	2,106	149	149	178	206	207	126	194	227	177	177	144	172

DEATHS IN CITIES

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TABLE V.—CONTINUED.—Deaths in Michigan, by months, cities and sex, during the year, 1898. (Stillbirths included.)

Cities.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Dowagiac.....	Total.	48	3	5	3	5	5	2	4	7	3	6	2	3
	Males.	27	1	2	1	3	2	2	3	5	2	4	1	1
	Fem..	21	2	3	2	2	3	—	1	2	1	2	1	2
East Tawas.....	Total.	22	5	—	2	1	3	3	2	—	2	2	—	2
	Males.	13	5	—	—	—	2	1	1	—	1	2	—	1
	Fem..	9	—	—	2	1	1	2	1	—	1	—	—	1
Eaton Rapids.....	Total.	36	5	2	1	3	2	6	5	3	4	2	—	1
	Males.	17	1	—	—	2	1	5	2	2	1	—	2	1
	Fem..	19	4	2	1	1	1	1	3	1	3	2	—	—
Escanaba.....	Total.	155	4	5	13	17	20	18	11	6	10	20	14	17
	Males.	94	3	4	9	11	8	10	7	5	9	9	11	8
	Fem..	60	1	1	3	6	12	8	4	1	1	11	3	9
	Unk..	1	—	—	1	—	—	—	—	—	—	—	—	—
Flint.....	Total.	136	12	9	11	15	14	6	9	11	15	10	11	13
	Males.	73	4	7	7	4	5	5	6	7	8	6	5	9
	Fem..	62	8	2	4	11	8	1	3	4	7	4	6	4
	Unk..	1	—	—	—	—	1	—	—	—	—	—	—	—
Gladstone.....	Total.	32	1	1	1	4	4	3	4	5	3	1	4	1
	Males.	20	—	1	—	3	1	2	4	3	3	1	1	1
	Fem..	12	1	—	1	1	3	1	—	2	—	—	3	—
Gladwin.....	Total.	10	1	—	—	2	—	—	1	2	—	—	—	4
	Males.	5	1	—	—	1	—	—	—	1	—	—	—	2
	Fem..	5	—	—	—	1	—	—	1	1	—	—	—	2
Grand Haven.....	Total.	55	5	3	4	5	4	3	6	4	5	8	4	4
	Males.	29	4	2	1	3	1	2	3	3	1	4	2	3
	Fem..	26	1	1	3	2	3	1	3	1	4	4	2	1
Grand Ledge.....	Total.	31	3	5	3	1	3	—	4	4	5	—	3	—
	Males.	13	—	3	—	1	2	—	1	2	2	—	2	—
	Fem..	18	3	2	3	—	1	—	3	2	3	—	1	—
Grand Rapids.....	Total.	1,111	92	70	121	124	101	77	70	89	95	87	96	89
	Males.	542	46	39	59	56	54	34	40	43	45	42	45	39
	Fem..	565	46	31	61	68	47	43	30	45	50	44	51	49
	Unk..	4	—	—	1	—	—	—	—	1	—	1	—	1
Greenville.....	Total.	41	2	1	3	5	8	2	2	3	4	2	3	6
	Males.	23	1	1	2	2	5	—	1	2	1	1	3	4
	Fem..	18	1	—	1	3	3	2	1	1	3	1	—	2
Harrison.....	Total.	8	—	—	1	—	—	1	1	—	2	1	1	1
	Males.	3	—	—	—	—	—	1	1	—	1	1	—	—
	Fem..	5	—	—	1	—	—	—	—	—	1	—	1	1
Hastings.....	Total.	33	1	4	4	4	2	2	—	5	3	3	1	4
	Males.	20	—	2	3	4	1	2	—	3	1	2	—	2
	Fem..	13	1	2	1	—	1	—	—	2	2	1	1	2
Hillsdale.....	Total.	45	8	3	2	4	6	2	3	5	4	2	1	5
	Males.	25	5	3	1	3	1	1	2	3	—	—	1	5
	Fem..	20	3	—	1	1	5	1	1	2	4	2	—	—
Holland.....	Total.	68	6	6	7	6	7	6	7	3	9	6	4	1
	Males.	39	2	4	6	2	4	4	3	1	5	4	4	—
	Fem..	28	4	2	1	3	3	2	4	2	4	2	—	1
	Unk..	1	—	—	—	1	—	—	—	—	—	—	—	—
Hudson.....	Total.	37	3	4	2	4	5	—	4	6	2	3	3	1
	Males.	18	2	2	1	2	2	—	3	2	1	2	1	—
	Fem..	19	1	2	1	2	3	—	1	4	1	1	2	1
Ionia.....	Total.	66	10	7	1	2	1	4	3	3	10	6	8	11
	Males.	34	5	3	1	2	1	3	1	3	3	5	2	5
	Fem..	32	5	4	—	—	—	1	2	—	7	1	6	6
Iron Mountain.....	Total.	117	7	11	9	14	12	8	6	7	13	6	9	15
	Males.	74	5	7	8	7	8	4	5	5	6	4	9	9
	Fem..	43	2	4	1	7	4	4	1	2	7	2	3	6
Ironwood.....	Total.	131	11	8	16	20	12	5	11	17	7	8	7	9
	Males.	73	4	7	13	9	5	4	4	11	4	2	2	5
	Fem..	57	7	1	3	10	7	1	7	6	3	6	5	4
	Unk..	1	—	—	—	1	—	—	—	—	—	—	—	—

TABLE V.—CONTINUED.—Deaths in Michigan, by months, cities and sex, during the year, 1898. (Stillbirths included.)

Cities.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Ishpeming	Total.	157	11	22	13	8	11	16	5	11	18	14	12	16
	Males.	96	7	14	8	6	7	7	2	6	15	7	5	12
	Fem.	60	4	8	4	2	4	9	3	5	3	7	7	4
	Unk.	1			1									
Jackson	Total.	339	29	25	28	20	17	26	35	27	22	39	37	34
	Males.	182	14	12	18	9	10	12	21	14	12	23	21	16
	Fem.	157	15	13	10	11	7	14	14	13	10	16	16	18
Kalamazoo	Total.	397	32	39	37	45	33	23	25	33	40	35	30	25
	Males.	211	22	23	20	21	17	13	14	14	22	16	17	12
	Fem.	186	10	16	17	24	16	10	11	19	18	19	13	13
Lansing	Total.	181	16	10	15	20	16	17	9	19	17	13	14	15
	Males.	93	6	4	4	11	8	9	8	10	7	7	9	10
	Fem.	87	10	6	11	9	8	8	1	9	9	6	5	5
	Unk.	1									1			
Lapeer	Total.	41	5	4	4	3	3	1	3	2	4	4	3	5
	Males.	18	2	3	2	1	2	1	2	2	2	4	3	3
	Fem.	23	3	1	2	2	1		3		2		3	2
Ludington	Total.	91	10	8	9	14	5	8	5	3	7	8	7	7
	Males.	48	5	3	2	7	3	6	3		5	7	3	4
	Fem.	43	5	5	7	7	2	2	2	3	2	1	4	3
Manistee	Total.	132	15	14	5	14	10	7	7	14	14	15	11	6
	Males.	72	6	3	3	7	9	1	7	10	8	9	6	3
	Fem.	60	9	11	2	7	1	6		4	6	6	5	3
Marine City	Total.	48	3	3	2	5	2	1	1	7	7	6	6	5
	Males.	19	1	1	1	2	1			3	3	2	4	4
	Fem.	29	2	2	1	3	1	1	1	7	4	4	2	1
Marquette	Total.	154	11	16	18	12	17	8	5	7	12	22	13	13
	Males.	88	6	13	13	3	7	4	2	5	7	10	10	8
	Fem.	66	5	3	5	9	10	4	3	2	5	12	3	5
Marshall	Total.	63	7	9	8	7	4	4	4	3	1	6	3	7
	Males.	27	3	3	2	4	1	1	2	2		4	2	3
	Fem.	35	4	6	6	3	2	3	2	1	1	2	1	4
	Unk.	1				1								
Mason	Total.	23		5	2	2	1	3	1	1		1	2	5
	Males.	13		3			1	1	1	1		1	2	3
	Fem.	10		2	2	2		2						2
Menominee	Total.	142	8	14	6	14	7	10	7	21	14	6	17	18
	Males.	80	4	11	2	8	2	9	2	12	7	4	10	9
	Fem.	60	4	3	4	6	5	1	5	9	7	2	6	8
	Unk.	2										1	1	1
Midland	Total.	19			3		2	1	3	3		2		5
	Males.	12			2		1	1	1	2		2		3
	Fem.	7			1		1		2	1				2
Monroe	Total.	73	6	5	7	9	4	7	3	7	7	7	6	5
	Males.	44	5	3	5	3	2	6	2	4	5	5	2	2
	Fem.	29	1	2	2	6	2	1	1	3	2	2	4	3
Mt. Clemens	Total.	95	6	9	12	7	13	6	13	8	6	7	4	4
	Males.	48	2	5	6	5	7	2	6	5	2	4	1	3
	Fem.	47	4	4	6	2	6	4	7	3	4	3	3	1
Mt. Pleasant	Total.	20	1	6	1	1	2	2		2	2		1	2
	Males.	9	1	1		1	1	2		2	2			1
	Fem.	11		5	1		1						1	1
Muskegon	Total.	256	20	14	23	29	16	20	20	24	25	25	17	23
	Males.	139	10	6	19	15	9	12	8	13	11	14	11	11
	Fem.	117	10	8	4	14	7	8	12	11	14	11	6	12
Negaunee	Total.	72	6	7	7	11	5	5	3	8	2	4	4	10
	Males.	41	5	4	2	7	3	3	1	6	2	1	2	5
	Fem.	31	1	3	5	4	2	2	2	2		3	2	5
	Total.	67	3	8	7	7	6	6	3	4	1	2	14	6
	Males.	36	1	6	3	3	3	4	2	2		2	7	5
	Fem.	31	2	2	4	4	3	2	1	2		2	7	1

TABLE V.—CONCLUDED.—Deaths in Michigan, by months, cities and sex, during the year, 1898. (Stillbirths included.)

Cities.	Sex.	Year 1898.	Months, 1898.											
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
North Muskegon...	Total.	5				1	1				1	1		1
	Males.	1				1								
	Fem.	4					1				1	1		1
Norway.....	Total.	66	5	3	2	3	3	6	7	5	2	12	10	8
	Males.	33	3	1	1	2		3	3	4	1	5	5	5
	Fem.	33	2	2	1	1	3	3	4	1	1	7	5	3
Owosso.....	Total.	107	13	11	10	11	2	10	5	6	10	6	9	14
	Males.	52	5	8	6	2	1	5	2	2	4	4	6	7
	Fem.	55	8	3	4	9	1	5	3	4	6	2	3	7
Petoskey.....	Total.	55	7	1	6	3	4	2	8	8	3	4	2	7
	Males.	30	3	1	3	3	2		6	3	2	3	1	3
	Fem.	25	4		3		2	2	2	5	1	1	1	4
Pontiac.....	Total.	152	15	13	10	12	9	11	10	16	15	7	19	15
	Males.	85	8	6	5	8	6	4	8	7	6	4	10	13
	Fem.	67	7	7	5	4	3	7	2	9	9	3	9	2
Port Huron...	Total.	266	24	22	26	27	32	14	29	19	20	19	18	16
	Males.	150	9	17	13	18	21	4	20	12	11	6	9	10
	Fem.	116	15	5	13	9	11	10	9	7	9	13	9	6
Saginaw.....	Total.	530	45	47	54	44	52	36	37	52	49	38	31	45
	Males.	296	19	27	31	26	32	15	17	30	35	21	18	25
	Fem.	234	26	20	23	18	20	21	20	22	14	17	13	20
Sault Ste Marie.....	Total.	140	13	3	5	13	4	11	18	11	23	14	15	10
	Males.	80	8	3	4	8	3	3	8	6	18	10	6	3
	Fem.	60	5		1	5	1	8	10	5	5	4	9	7
St. Clair.....	Total.	52	3	5	9	8	3	2	4	8	3	2	3	2
	Males.	30	2	3	4	5	1	2	2	5	2	1	2	1
	Fem.	22	1	2	5	3	2		2	3	1	1	1	1
St. Ignace.....	Total.	34	2	1	3	4	5	2	2	3	3	3	1	5
	Males.	20			2	1	2	1	2	1	3	3	1	4
	Fem.	14	2	1	1	3	3	1		2				1
St. Joseph.....	Total.	64	2	6	6	1	5	8	10	5	2	3	10	6
	Males.	34	1	2	2	1	4	2	6	4	1	2	6	3
	Fem.	30	1	4	4		1	6	4	1	1	1	4	3
St. Louis.....	Total.	29	2	2	4	2		5	2	4	1	1	3	3
	Males.	13			1			5	1	1			3	2
	Fem.	16	2	2	3	2			1	3	1	1		1
Stanton.....	Total.	11	1	2	1		1	3		1		2		
	Males.	7	1		1		1	1		1		2		
	Fem.	4		2				2						
Sturgis.....	Total.	42	3	1	5	4	4	7	3	3	2	2	4	4
	Males.	21	1	1	4	3	1	3	1	1	2		2	2
	Fem.	21	2		1	1	3	4	2	2		2	2	2
Tawas City...	Total.	17	1	2			1	1	1	1	3	2	1	4
	Males.	11	1	1				1	1	1	2	2		2
	Fem.	6		1			1				1		1	2
Three Rivers...	Total.	34	2	2	5	1	1	1	5	2	4	4	2	5
	Males.	24			4	1	1	1	3	2	4	3	1	4
	Fem.	10	2	2	1				2			1	1	1
Traverse City.	Total.	122	8	7	7	12	9	14	5	9	10	13	11	17
	Males.	71	6	5	2	7	4	6	2	6	5	6	10	12
	Fem.	51	2	2	5	5	5	8	3	3	5	7	1	5
West Bay City	Total.	181	16	10	14	15	14	22	15	8	16	18	16	17
	Males.	97	8	4	5	9	13	11	8	5	6	10	11	7
	Fem.	83	8	6	9	5	1	11	7	3	10	8	5	10
Wyandotte...	Total.	79	6	12	7	8	8	5	5	4	5	5	10	4
	Males.	45	1	8	5	5	4	2	4	2	3	4	4	3
	Fem.	34	5	4	2	3	4	3	1	2	2	1	6	1
Ypsilanti.....	Total.	89	7	7	10	10	8	3	6	7	7	7	7	6
	Males.	46	4	2	4	3	5	2	3	4	4	4	4	4
	Fem.	43	3	5	6	7	3	1	3	3	3	3	3	2

TABLE VI.—Deaths in Michigan, by ages, cities

Cities.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
ALL CITIES.....	Total.....	12,704	865	2,669	524	199	146	106
	Males.....	6,684	488	1,490	280	101	73	53
	Fem.....	6,004	361	1,179	244	98	73	53
	Unk.....	16	16					
Adrian.....	Total.....	135	2	21	4	2	1	
	Males.....	58	1	9	2	2	1	
	Fem.....	77	1	12	2			
Albion.....	Total.....	53		4				1
	Males.....	24		2				1
	Fem.....	29		2				
Alpena.....	Total.....	159	8	35	15	2	3	2
	Males.....	71	2	19	6	1	1	1
	Fem.....	88	6	16	9	1	2	1
Ann Arbor.....	Total.....	192	1	17	2	1		
	Males.....	95		11	2	1		
	Fem.....	97	1	6				
Au Sable.....	Total.....	17		5	1			
	Males.....	7		4	1			
	Fem.....	10		1				
Battle Creek.....	Total.....	259	7	30	10	2	1	
	Males.....	132	3	15	6			
	Fem.....	126	3	15	4	1	1	
	Unk.....	1	1					
Bay City.....	Total.....	312	28	75	27	5	3	
	Males.....	152	18	39	14	3	1	
	Fem.....	160	10	36	13	2	2	
Belding.....	Total.....	28	3	4	1		1	
	Males.....	10	2				1	
	Fem.....	18	1	4	1			
Benton Harbor.....	Total.....	73	5	14	1			1
	Males.....	38	4	8				1
	Fem.....	35	1	6	1			
Bessemer.....	Total.....	58	4	17	4	4	2	1
	Males.....	36	3	11	2		1	
	Fem.....	22	1	6	2	4	1	1
Big Rapids.....	Total.....	72	6	7	1	4		
	Males.....	48	2	4		3		
	Fem.....	23	3	3	1	1		
	Unk.....	1	1					
Cadillac.....	Total.....	55	5	16	2			2
	Males.....	30	3	12	2			
	Fem.....	25	2	4				2
Charlotte.....	Total.....	54		3	2		1	
	Males.....	34		3			1	
	Fem.....	20			2			
Cheboygan.....	Total.....	140	13	44	17	3	4	1
	Males.....	71	8	24	9	2	3	1
	Fem.....	69	5	20	8	1	1	
Clare.....	Total.....	16		2			1	
	Males.....	9		1				
	Fem.....	7		1			1	
Coldwater.....	Total.....	78	6	6	4		1	
	Males.....	43	3	4	2		1	
	Fem.....	35	3	2	2			

* Stillbirths included.

† Stillbirths not included.

DEATHS IN CITIES

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and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
3,644 1,997 1,647	332 172 150	227 122 105	370 184 186	554 278 276	515 249 266	468 217 251	502 244 258	479 260 219	442 253 189	511 276 235	532 294 238	570 295 275	661 330 331	679 346 333	602 318 284	746 349 397	15 12 3
28 14 14	1 1 1	2 1 1	5 4 1	3 2 1	5 4 1	4 4 1	3 2 1	8 4 1	4 3 1	4 3 1	5 2 1	8 3 5	15 4 11	11 6 5	11 1 10	16 9 7	-----
5 3 2	-----	-----	-----	2 2 -----	1 1 -----	1 1 -----	3 2 1	2 2 2	5 2 3	8 2 6	1 1 -----	3 3 -----	3 3 -----	5 4 1	8 6 6	6 2 4	-----
57 28 29	8 4 4	7 3 4	6 3 4	8 4 4	3 1 2	9 2 7	8 1 7	4 2 2	6 4 2	5 4 1	7 2 5	2 1 1	4 1 3	4 3 1	4 3 1	9 3 6	-----
20 14 6	6 3 3	4 3 1	9 3 5	4 3 1	14 4 10	6 4 2	12 7 5	9 3 6	11 3 8	16 9 7	13 9 4	10 4 6	13 3 10	15 7 8	9 5 4	20 10 10	-----
6 5 1	-----	1 -----	1 -----	-----	-----	3 -----	1 -----	1 -----	-----	2 1 1	-----	-----	-----	-----	1 -----	1 -----	-----
43 22 21	4 3 1	3 1 2	6 2 4	12 7 5	15 6 9	10 3 7	14 5 9	12 8 4	11 8 3	11 5 6	17 12 5	15 9 6	15 9 6	18 9 9	18 9 9	27 11 16	1 -----
110 57 53	5 4 1	6 2 4	7 2 5	8 2 6	10 8 8	9 2 7	7 2 3	13 6 7	10 5 5	16 9 7	13 7 6	10 7 3	20 10 10	14 6 8	10 4 6	16 5 11	-----
6 1 5	-----	-----	5 1 4	3 1 2	-----	-----	1 1 -----	1 1 2	3 1 -----	-----	-----	1 1 1	1 1 -----	-----	1 1 -----	3 -----	-----
16 9 7	3 2 1	1 1 4	5 1 4	2 1 -----	-----	2 -----	5 2 3	3 2 1	2 2 -----	3 3 -----	6 3 3	3 1 2	2 -----	4 3 3	7 4 3	4 3 1	-----
28 14 14	2 1 1	1 1 -----	-----	4 4 -----	7 4 3	2 1 1	5 4 1	-----	2 2 -----	-----	-----	2 1 -----	-----	-----	-----	1 1 -----	-----
12 7 5	1 -----	2 2 -----	3 3 -----	6 4 2	5 4 1	2 1 -----	1 1 -----	4 2 2	3 3 -----	3 2 1	2 1 1	6 4 2	6 6 -----	2 2 -----	4 2 2	4 2 2	-----
20 14 6	1 1 1	2 1 1	2 1 -----	-----	1 1 -----	2 2 -----	1 1 -----	2 2 -----	-----	2 2 -----	1 1 -----	4 3 1	1 1 -----	5 3 -----	3 2 -----	3 2 1	-----
6 4 2	-----	-----	1 -----	-----	-----	2 1 -----	1 1 -----	2 1 2	7 5 2	2 2 -----	2 1 1	2 2 3	6 5 3	5 5 1	7 6 1	11 5 6	-----
69 39 30	7 3 4	4 1 3	2 1 1	4 1 3	2 2 -----	3 3 -----	4 1 3	1 1 -----	5 4 1	4 3 1	2 1 -----	1 1 -----	4 2 -----	5 1 4	5 2 2	5 1 4	-----
3 1 2	1 -----	1 1 -----	-----	-----	1 1 -----	2 1 -----	1 1 -----	2 2 1	-----	1 1 -----	-----	-----	-----	1 1 -----	2 -----	-----	-----
11 7 4	-----	-----	2 2 -----	2 1 1	4 1 3	-----	-----	2 3 1	3 1 2	3 2 1	8 5 3	7 2 5	7 5 2	8 4 4	5 3 2	10 6 4	-----

† Stillbirths not included.

TABLE VI.—CONTINUED.—Deaths in Michigan by ages,

Cities.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Corunna.....	Total.....	21	—	4	—	—	—	—
	Males.....	13	—	1	—	—	—	—
	Fem.....	8	—	3	—	—	—	—
Detroit.....	Total.....	4,355	355	1,107	189	78	47	36
	Males.....	2,249	208	589	99	45	18	17
	Fem.....	2,106	177	518	90	33	29	19
Dowagiac.....	Total.....	48	2	7	2	1	1	—
	Males.....	27	2	5	1	1	1	—
	Fem.....	21	—	2	1	—	—	—
East Tawas.....	Total.....	22	1	9	1	—	—	1
	Males.....	13	1	7	1	—	—	1
	Fem.....	9	—	2	—	—	—	—
Eaton Rapids.....	Total.....	36	—	3	—	1	—	1
	Males.....	17	—	3	—	—	—	1
	Fem.....	19	—	—	—	1	—	—
Escanaba.....	Total.....	155	12	38	11	3	4	1
	Males.....	94	8	22	6	2	3	—
	Fem.....	60	3	16	5	1	1	1
	Unk.....	1	1	—	—	—	—	—
Flint.....	Total.....	136	5	13	2	—	—	1
	Males.....	73	2	7	2	—	—	—
	Fem.....	62	2	6	—	—	—	1
	Unk.....	1	1	—	—	—	—	—
Gladstone.....	Total.....	32	1	11	3	—	—	—
	Males.....	20	1	2	3	—	—	—
	Fem.....	12	—	9	—	—	—	—
Gladwin.....	Total.....	10	—	3	2	—	—	—
	Males.....	5	—	1	1	—	—	—
	Fem.....	5	—	2	1	—	—	—
Grand Haven.....	Total.....	55	1	7	4	2	2	1
	Males.....	29	1	2	2	—	2	1
	Fem.....	26	—	5	2	2	—	—
Grand Ledge.....	Total.....	31	—	2	—	—	—	—
	Males.....	13	—	1	—	—	—	—
	Fem.....	18	—	1	—	—	—	—
Grand Rapids.....	Total.....	1,111	105	218	44	18	11	7
	Males.....	542	53	126	24	8	7	2
	Fem.....	565	48	92	20	10	4	5
	Unk.....	4	4	—	—	—	—	—
Greenville.....	Total.....	41	1	6	—	2	—	—
	Males.....	23	1	3	—	1	—	—
	Fem.....	18	—	3	—	1	—	—
Harrison.....	Total.....	8	—	2	—	—	—	—
	Males.....	3	—	1	—	—	—	—
	Fem.....	5	—	1	—	—	—	—
Hastings.....	Total.....	33	2	—	—	—	1	—
	Males.....	20	2	—	—	—	—	—
	Fem.....	13	—	—	—	—	1	—
Hillsdale.....	Total.....	45	1	4	—	—	—	—
	Males.....	25	—	2	—	—	—	—
	Fem.....	20	1	2	—	—	—	—
Holland.....	Total.....	68	5	16	4	—	1	—
	Males.....	39	2	11	3	—	—	—
	Fem.....	28	2	5	1	—	—	—
	Unk.....	1	1	—	—	—	—	—

* Stillbirths included.

† Stillbirths not included.

DEATHS IN CITIES

71

cities and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.																	
Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
4				1	1	1				1	2	3		2	3	3	
1				1	1	1				1	1	3		1	3	3	
3				1													
1,457	129	51	112	180	158	166	156	158	128	156	171	198	198	203	166	182	1
768	67	27	64	87	85	79	75	91	80	88	90	104	97	80	82	76	1
689	62	24	48	93	73	87	81	67	48	68	81	94	101	123	84	106	
11		2	1	2	3				2	3	3			4	6	6	
8		2			1				2	1	1			2	2	3	
3				2	2					2	2		1	2	4	3	
11					2	1	3			1	1		1		1		
9						1				1							
2							3										
5	1			2	3			2	1	2	2	3	1	5	8	1	
4	1			1					1	1	1	3		2	2	1	
1				1	3			2		1	1		1	3	6		
57	4	3	2	10	7	7	3	4	9	6	7	3	2	7	5	5	2
33	2	1	2	5	4	4	2	4	7	3	4	2	1	6	3	1	2
24	2	2	5	3	3	3	1	2	3	3	3	1	1	1	2	4	
16	3	2	7	4	1	4	6	3	6	9	10	7	13	14	12	14	
9	2	1	3	2	1	3	2	2	3	7	5	3	9	7	7	4	
7	1	1	4	2	1	1	2	1	3	2	5	4	4	4	5	10	
14	2	1		2	4		2	1	3	1						1	
5	1	1		2	3		2	1	2	1						1	
9	1			1	1				1								
5					1		1								2		
2													1		2		
3					1		1										
16	7	1	3	2	1	2	2	3	1		1	2	3	3	4	3	
7	5		2	1		1	1		1			1	1	3	3	3	
9	2	1	1	1	1	2	1	3			1	1	2		1		
2	1		1	1	2	1		2	1	2	2	2	2	4	3	5	
1	1		1	1	2	1		2	1	1	2	2	1	2	3	1	
1				1					1							4	
298	25	28	32	47	49	31	37	38	41	42	32	49	64	66	56	71	
167	11	14	13	15	22	17	15	19	19	15	17	18	34	27	29	37	
131	14	14	19	32	27	14	22	19	22	27	15	31	30	39	27	34	
8	1	1	1		2	1		2	2	4	1	3	3	3	2	6	
4	1				1	1		2	1	2			3	2	1	3	
4		1							1	2	1	3		1	1	3	
2				1				1			2	1				1	
1								1			2						
1				1								1					
1				2		1				1	6	3	4	5	4	4	
1				1		1				1	3	3	2	3	4	2	
4	1		1	1	3		1	3	1	2	4	4	3	4	4	8	
2	1		1	1	2		1	3	1	1	4	2	3	2	1	5	
2			1		1					1		2		2	3	3	
21	1	1	5	4		6	3	3			1	4	3	3	3	4	1
15	1	1	3	3		2	1	1					2	3	2	2	1
6			2	1		4	2	2			1	4	1		1	2	

† Stillbirths not included.

TABLE VI.—CONTINUED.—Deaths in Michigan by ages,

Cities.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Hudson	Total	37		4				
	Males	18		1				
	Fem.	19		3				
Ionia	Total	66		11	1	3	1	
	Males	34		4	1		1	
	Fem.	32		7		3		
Iron Mountain	Total	117	4	51	6	1	2	2
	Males	74	2	27	4	1	2	
	Fem.	43	2	24	2			2
Ironwood	Total	131	10	41	11	6	5	3
	Males	73	5	23	6	2	1	1
	Fem.	57	4	18	5	4	4	2
	Unk.	1	1					
Ishpeming	Total	157	17	39	8	2	5	3
	Males	96	13	25	3		3	1
	Fem.	60	3	14	5	2	2	2
	Unk.	1	1					
Jackson	Total	339	12	60	8	2	3	
	Males	182	7	35	4	1	2	
	Fem.	157	5	25	4	1	1	
Kalamazoo	Total	397	15	41	10	3	8	5
	Males	211	11	23	7		4	4
	Fem.	186	4	18	3	3	4	1
Lansing	Total	181	9	26	1		1	1
	Males	93	3	15			1	
	Fem.	87	5	11	1			1
	Unk.	1	1					
Lapeer	Total	41	1	2				
	Males	18	1	2				
	Fem.	23						
Ludington	Total	91	2	11	6	3	1	2
	Males	48	2	6	2	1		1
	Fem.	43		5	4	2	1	1
Manistee	Total	132	13	43	6	1	6	2
	Males	72	8	25	3	1	3	1
	Fem.	60	5	18	3		3	1
Marine City	Total	48	4	6	2	3		1
	Males	19	3	2	1	1		
	Fem.	29	1	4	1	2		1
Marquette	Total	154	16	29	3	3	3	2
	Males	88	8	18	3	2	1	2
	Fem.	66	8	11		1	2	
Marshall	Total	63	1	5	2			
	Males	27		5				
	Fem.	35			2			
	Unk.	1	1					
Mason	Total	23		4				
	Males	13		2				
	Fem.	10		2				
Menominee	Total	142	21	46	11	2		1
	Males	80	11	24	5	2		1
	Fem.	60	8	22	6			
	Unk.	2	2					
Midland	Total	19	1	2				
	Males	12	1	2				
	Fem.	7						

* Stillbirths included.

† Stillbirths not included.

DEATHS IN CITIES

73

cities and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
4						1		1		2		3	5	7	6	8	
1												1	2	4	5	5	
3						1		1		2		2	3	3	1	3	
16	3		2	6	2	2	1	1		4	2	6	5	4	4	8	
6	1			2	2			1		2	1	5	4	2	1	6	
10	2		2	4		2				2	1	1	1	2	3	2	
62	3	3	4	3	5	6	7	3	4	3		2	3	1	2	2	
34	1	2	2	3	5	3	2	2	4	2		2	3	1	2		
28	2	1	2			3	1	1		1						2	
66	6	5	3	6	5	9	7	3	4	1	1	2	2	1			
33	4	2		4	3	7	5	1	2	1	1	2	2	1			
33	2	3	3	2	2	2	2	2	2								
57	3	3	2	8	8	10	10	3	5	3	4	3	4	5	8	3	1
32	1	2	2	5	5	7	8	1	5	1	3	3	3	1	3		1
25	2	1		3	3	3	2	2		2	1		1	4	5	3	
73	6	6	9	14	15	11	13	18	13	10	11	17	27	29	21	34	
42	4	2	4	9	5	6	8	11	6	6	8	7	8	15	14	16	
31	2	4	5	5	10	5	5	7	7	4	3	10	15	14	7	18	
67	4	7	11	18	19	22	21	26	25	13	24	19	33	18	28	27	
38	4	5	5	8	8	9	8	14	14	7	12	7	20	11	18	15	
29			6	10	14	13	13	12	11	6	12	12	13	7	10	12	
29	4	3	5	10	8	6	6	3	7	3	12	15	17	14	16	14	
16	2	3	2	6	4	3	2		3	1	8	10	6	9	9	6	
13	2		3	4	4	3	4	3	4	2	4	5	11	5	7	8	
2		2	3	1	1			3	1	3		6	3	8	2	5	
2		1	1	1				2				2		4	2	2	
		1	2		1			1	1	3		4	3	4		3	
23	6	5	1	3	6	4	4	5	4	4	5	5	3	1	3	7	
10	4	2		2	5		1	2	2	2	3	3	2			6	
13	2	3		1	1	4	3	3	2	2	2	2	1		3	1	
58	2	3	3	6	7	6	6	3	2	9		2	6		4	1	
33	1	3	2	3	4	2	3	1	1	2		1	4		3		1
25	1		1	3	3	4	3	2	1	7		1	2		1	1	
12	3	2		3		3	2	1	2	1	5	2	1	3	1	3	
4	2	1		2		1		1	1					3		1	
8	1	1		1		2	2		1	1	5	2	1		1	2	
40	1	5	4	4	12	7	13	7	5	10	2	5	3	13	3	4	
26		2	1	3	5	3	8	5	2	8	2	4	1	7	2	1	
14	1	3	3	1	7	4	5	2	3	2		1	2	6	1	3	
7	1		3	4	1	1	2	3	1	6	1	2	6	7	9	8	
5	1			1				2		3		1	3	4	4	3	
2			3	3	1	1	2	1	1	3	1	1	3	3	5	5	
4	1		1		2		1		2	4			1	1	2	4	
2	1		1						2	2				1	1	3	
2					2		1			2					1	1	
60	1	1	7	11	4	4	6	2	7	4	1	3	5	1	1	3	
32		1	6	6	2	3	2	2	6	2		2	2	1		2	
28	1		1	5	2	1	4		1	2	1	1	3		1	1	
2	1	1	3	1		1			2		1	2	1	1	1	1	
2	1	1	2	1					2			1					

† Stillbirths not included.

TABLE VI.—CONTINUED.—Deaths in Michigan by ages,

Cities.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Monroe	Total.....	73	2	14	1	—	—	1
	Males.....	44	2	6	1	—	—	—
	Fem.....	29	—	8	—	—	—	1
Mt. Clemens.....	Total.....	95	1	17	6	1	1	3
	Males.....	48	—	9	3	—	—	1
	Fem.....	47	1	8	3	1	1	2
Mt. Pleasant.....	Total.....	20	—	3	1	—	—	—
	Males.....	9	—	2	—	—	—	—
	Fem.....	11	—	1	1	—	—	—
Muskegon.....	Total.....	256	12	44	7	4	2	2
	Males.....	139	9	28	4	3	—	1
	Fem.....	117	3	16	3	1	2	1
Negaunee.....	Total.....	72	5	22	—	2	3	—
	Males.....	41	4	13	—	—	3	—
	Fem.....	31	1	9	—	2	—	—
Niles.....	Total.....	67	1	6	—	2	2	—
	Males.....	36	1	4	—	2	1	—
	Fem.....	31	—	2	—	—	1	—
North Muskegon.....	Total.....	5	—	—	—	—	—	—
	Males.....	1	—	—	—	—	—	—
	Fem.....	4	—	—	—	—	—	—
Norway.....	Total.....	66	7	23	6	2	2	1
	Males.....	33	3	10	3	—	1	—
	Fem.....	33	4	13	3	2	1	1
Owosso.....	Total.....	107	3	21	3	1	4	3
	Males.....	52	2	15	2	1	1	1
	Fem.....	55	1	6	1	—	3	2
Petoskey.....	Total.....	55	7	7	1	—	1	1
	Males.....	30	4	3	1	—	1	1
	Fem.....	25	3	4	—	—	—	—
Pontiac.....	Total.....	152	4	14	5	—	—	3
	Males.....	85	1	9	4	—	—	3
	Fem.....	67	3	5	1	—	—	—
Port Huron.....	Total.....	266	22	45	9	3	2	1
	Males.....	150	17	28	4	2	2	1
	Fem.....	116	5	17	5	1	—	—
Saginaw.....	Total.....	530	35	99	12	7	3	3
	Males.....	296	20	65	6	3	2	—
	Fem.....	234	15	34	6	4	1	3
Sault Ste. Marie.....	Total.....	140	9	50	10	5	1	1
	Males.....	80	3	30	4	2	—	1
	Fem.....	60	6	20	6	3	1	—
St. Clair.....	Total.....	52	1	10	1	1	2	—
	Males.....	30	1	6	1	—	—	—
	Fem.....	22	—	4	—	1	2	—
St. Ignace.....	Total.....	34	1	3	3	1	1	—
	Males.....	20	1	1	2	—	—	—
	Fem.....	14	—	2	1	1	1	—
St. Joseph.....	Total.....	64	3	15	4	1	—	—
	Males.....	34	2	8	3	—	—	—
	Fem.....	30	1	7	1	1	—	—
St. Louis.....	Total.....	29	—	7	2	—	—	—
	Males.....	13	—	5	1	—	—	—
	Fem.....	16	—	2	1	—	—	—

* Stillbirths included.

† Stillbirths not included.

DEATHS IN CITIES

75

cities and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
16	2	2	4	2	2	---	5	1	1	3	4	5	5	7	6	6	-----
7	2	2	2	2	1	---	3	3	1	3	2	1	4	6	3	4	-----
9	---	---	2	---	1	---	2	1	1	---	2	4	1	1	3	2	-----
28	2	3	3	4	8	4	5	3	3	6	2	1	4	8	6	3	1
13	1	2	---	2	5	4	2	5	3	4	1	---	---	6	3	1	1
15	1	1	3	2	3	---	3	3	---	2	1	1	4	2	3	2	-----
4	---	1	2	---	2	---	1	1	1	---	1	1	2	---	3	1	-----
2	---	1	1	---	2	---	1	1	1	---	1	1	1	---	1	1	-----
2	---	1	1	---	2	---	1	1	1	---	1	1	1	---	1	1	-----
59	13	6	12	14	7	8	14	14	7	14	16	19	7	8	10	16	-----
36	4	4	8	8	2	3	7	7	3	6	10	12	3	4	6	8	-----
23	9	2	4	6	5	5	8	7	4	8	6	7	4	4	4	8	-----
27	1	1	4	3	4	3	5	3	---	3	5	2	2	2	1	1	-----
16	---	---	1	2	4	2	4	1	---	2	4	1	---	---	---	---	-----
11	1	1	3	1	1	1	1	2	---	1	1	1	2	2	1	1	-----
10	1	1	3	2	7	2	2	4	2	3	7	5	3	3	3	7	1
7	1	1	1	1	1	1	1	1	1	1	5	2	1	---	3	6	1
3	---	---	2	1	5	1	1	4	1	2	2	3	2	3	---	1	-----
---	---	---	---	---	---	---	---	---	2	1	1	---	---	---	---	---	1
---	---	---	---	---	---	---	---	---	2	1	1	---	---	---	---	---	1
34	1	2	---	1	5	3	1	3	3	2	1	---	1	1	1	---	-----
14	1	1	---	1	5	1	1	1	2	1	1	---	1	1	1	---	-----
20	---	---	---	---	---	2	---	2	1	---	---	---	---	---	---	---	-----
32	4	3	3	4	5	3	4	5	2	2	8	4	7	4	7	7	-----
20	2	1	1	---	2	---	---	3	1	1	3	3	4	3	4	3	-----
12	2	2	2	4	3	3	4	2	1	1	5	2	3	1	3	4	-----
10	1	4	2	3	2	2	3	1	2	3	1	1	2	1	1	9	-----
6	1	1	1	1	1	1	2	1	---	2	2	1	2	---	---	6	-----
4	---	3	1	1	1	---	3	---	2	1	1	---	---	1	1	3	-----
22	1	---	2	8	4	7	10	8	8	5	10	9	11	18	12	13	-----
16	1	---	1	1	4	3	4	4	5	3	7	5	7	10	6	7	-----
6	---	---	1	7	---	4	6	4	3	2	3	4	4	8	6	6	-----
60	7	5	5	9	11	16	13	5	10	13	12	18	12	19	13	15	1
37	4	2	1	3	6	7	7	2	4	5	8	11	6	12	7	10	1
23	3	3	4	6	5	9	6	3	6	8	4	7	6	7	6	5	-----
124	12	16	35	18	23	17	29	19	34	38	22	30	25	19	21	1	-----
76	4	6	21	5	10	10	18	10	24	21	10	15	14	12	8	1	-----
48	8	6	14	13	13	7	11	9	10	17	12	15	11	7	13	---	-----
67	1	1	11	9	5	6	5	4	2	3	5	2	2	1	4	---	-----
37	1	---	10	4	3	3	5	2	2	3	4	---	---	---	1	---	-----
30	---	1	1	5	2	3	---	2	---	---	1	2	---	1	3	---	-----
14	2	3	4	4	2	---	1	3	1	1	2	2	1	5	3	3	-----
7	2	3	3	1	1	---	1	1	1	1	1	1	1	4	3	1	-----
7	---	---	1	3	1	---	---	2	---	1	1	1	1	1	---	2	-----
8	1	1	3	2	2	2	2	2	2	---	---	1	---	---	2	3	-----
3	---	1	2	1	1	1	2	2	1	1	---	---	---	---	2	2	-----
5	1	---	1	1	1	1	---	---	1	1	---	1	---	---	---	1	-----
20	---	1	---	5	5	1	1	---	2	3	3	1	6	4	2	7	-----
11	---	---	---	4	2	1	1	---	1	1	2	1	3	4	1	1	-----
9	---	1	---	1	3	---	---	---	1	2	1	1	---	---	1	6	-----
9	---	---	1	1	1	---	1	1	---	2	2	1	1	1	1	7	-----
6	---	---	---	---	---	---	1	1	---	1	1	1	1	---	---	2	-----
3	---	---	1	1	1	---	---	---	1	1	1	1	---	1	1	5	-----

† Stillbirths not included.

TABLE VI.—CONCLUDED.—Deaths in Michigan by ages,

Cities.	Sex.	Total deaths at all ages, 1898.*	Still-born.	Ages in years.				
				Under 1 year.†	1.	2.	3.	4.
Stanton.....	Total.....	11						
	Males.....	7						
	Fem.....	4						
Sturgis.....	Total.....	42	2	7	4	1		
	Males.....	21	2	4	2	1		
	Fem.....	21		3	2			
Tawas City.....	Total.....	17	1	6				
	Males.....	11	1	5				
	Fem.....	6		1				
Three Rivers.....	Total.....	34		2				
	Males.....	24		1				
	Fem.....	10		1				
Traverse City.....	Total.....	122	3	16	4	2		1
	Males.....	71	2	8		2		1
	Fem.....	51	1	8	4			
West Bay City.....	Total.....	181	10	43	10	4	1	7
	Males.....	97	8	26	7	3	1	6
	Fem.....	83	1	17	3	1		1
	Unk.....	1	1					
Wyandotte.....	Total.....	79		16	4	4		1
	Males.....	45		10	3	1		
	Fem.....	34		6	1	3		1
Ypsilanti.....	Total.....	89	1	8	3	1	1	
	Males.....	46		6	2		1	
	Fem.....	43	1	2	1	1		

* Stillbirths included.

† Stillbirths not included.

DEATHS IN CITIES

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cities and sex, during the year 1898. (Stillbirths included.)

Ages in five-year periods.

Under 5 years.†	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 and over.	Unk.
							1	1			2	1	4		1	1	
							1	1			1	1	3				
											1		1			1	
12		1	5	4	1	1		2		2	1	2	2	1	3	3	
7		1	1			1		1		1	1	2	1	1	1	1	
5			4	4	1			1		1			1		2	2	
6		1	1			2		1	1					2		2	
5		1				1								1		2	
1			1			1		1	1					1			
2		1	1	3	1	1	3	1	2	2	1	2	5	4	2	3	
1			1	3	1	1	1	1	1	2	1	2	4	2	1	2	
1		1					2		1				1	2	1	1	
23	3	1	4	4	5	6	10	9	4	6	4	7	12	10	4	6	1
11	2	1	2	4	3	4	3	6	2	5	3	6	4	6	2	4	1
12	1		2		2	2	7	3	2	1	1	1	8	4	2	2	
65	4	5	10	10	8	5	7	5	7	3	11	5	8	7	4	7	
43	3	4	3	5	6	2	4	2	3	1	4	1	1	4	2	1	
22	1	1	7	5	2	3	3	3	4	2	7	4	7	3	2	6	
25	4	1	2	3	4	4	3	2	3	3	2	3	1	7	3	8	1
14	2	1	1		3	3	2		3	2	1	1		5	1	5	1
11	2		1	3	1	1	1	2		1	1	2	1	2	2	3	
13	3	3		6	3		6	2	3	6	4	3	10	6	8	11	1
9	2	2		3	1		3	2	1	4	3	1	4	4	3	4	
4	1	1		3	2		3		2	2	1	2	6	2	5	7	1

† Stillbirths not included.

TABLE VII.—Causes of death in Michigan,

Classification No.	Causes of death, 1898.	All cities.	Cities—Adrian														
			Adrian.	Albion.	Alpena.	Ann Arbor.	Au Sable.	Battle Creek.	Bay City.	Belding.	Benton Harb'r.	Bessemer.	Big Rapids.	Cadillac.	Charlotte.	Cheboygan.	Clare.
	ALL CAUSES.....	12,704	135	53	150	192	17	259	312	28	73	58	72	55	54	140	16
	<i>Stillbirths</i> (included in above):	864	2	.....	8	1	.....	7	28	3	5	4	6	5	.....	13	.....
	GENERAL DISEASES.																
	I. EPIDEMIC DISEASES.																
1	Typhoid fever.....	208	1	1	1	2	.....	12	4	1	.....	.....	4	.....	1	.....	1
1a	Typho-malarial fever.....	32	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....
2	Typhus fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3	Scurvy.....	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
4	Smallpox.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5	Measles.....	39	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	.....	.....	4
6	Scarlet fever.....	43	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	1	.....	.....	2
7	Whooping cough.....	154	.....	1	2	.....	.....	6	15	.....	2	.....	1	1	.....	7	.....
8a	Diphtheria.....	154	.....	.....	7	.....	.....	1	1	.....	1	1	.....	1	.....	3	1
8b	Membranous croup.....	32	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....	.....	.....	.....
8c	Croup.....	25	.....	.....	1	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....
9	Influenza.....	137	7	1	.....	2	1	2	2	3	3	.....	1	3	1	.....	.....
10	Milliary fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11	Asiatic cholera.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
12	Cholera nostras.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13a	Chicken pox.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13b	German measles.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....
13c	Mumps.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
13d	Trichinosis.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	II. OTHER GENERAL DISEASES.																
14	Pyemia and septicemia.....	84	.....	.....	.....	5	.....	3	2	.....	1	.....	.....	.....	1	.....	.....
15	Glanders and farcy.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
16	Malignant pustule.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
17	Rabies.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
18	Relapsing fever.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
19-20	Malaria.....	59	2	1	1	.....	.....	3	.....	.....	1	.....	.....	.....	.....	.....	.....
21	Pellagra.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
	<i>Tuberculosis—</i>																
22a	Lungs.....	943	5	1	12	24	2	19	23	4	9	2	3	2	6	9	1
22b	Meninges.....	70	1	.....	.....	2	.....	.....	3	.....	1	.....	.....	.....	.....	.....	.....
22c	Peritoneum.....	53	1	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....
22d	Skin.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
22e	Other organs.....	29	2	1	1	1	2
22f	General.....	165	2	1	2	3	4	1	4	2	1	2

CAUSES OF DEATH IN CITIES

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by cities, during the year 1898. (Stillbirths included.)

to Ishpeming.																							Classification No.	
Coldwater.	Corunna.	Detroit.	Dowagiac.	East Tawas.	Eaton Rapids.	Escanaba.	Flint.	Gladstone.	Gladwin.	Grand Haven.	Grand Ledge.	Grand Rapids.	Greenville.	Harrison.	Hastings.	Hillsdale.	Holland.	Hudson.	Ionia.	Iron Mountain.	Ironwood.	Ishpeming.		
78	21	4355	48	22	36	155	136	32	10	55	31	1111	41	8	33	45	68	37	66	117	131	157		
6		385	2	1		12	5	1		1		104	1		2	1	5			4	10	17		
1		51	3			3	2	3		1		29	3				1	1			3	2	5	1
		6			1							2				1							1a	
																							2	
		3				1																1	3	
		1																					4	
		2				5																	5	
		12						1													1		6	
2		55				10							2	1							1		7	
		71								11			9									7	10	8a
		13			1					1			4									2	1	8b
		16																			1	2		8c
3		43		1	1			2	1		3	2	13	3			2	1		1		1		9
																								10
																								11
						1																		12
																								13a
																								13b
		1																						13c
		1																						13d
1		15			1	2	1		1			13									3			14
																								15
																								16
		1																						17
																								18
1		15						1					6	1		2		1		1		1		19-20
																								21
4	1	309	1		3	15	11	1		5	1	96	2			2	1	4		3	8	8	11	22a
1		24				3						11					1				2		3	22b
		8		1		2	1					5						1			1	1	1	22c
																								22d
		9	1																					22e
2		48	1	2	2	1	2	1				17						2	1		2	1	2	22f

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	All cities.	Cities—Adrian														
			Adrian.	Albion.	Alpena.	Ann Arbor.	Au Sable.	Battle Creek.	Bay City.	Belding.	Benton Harbor.	Bessemer.	Big Rapids.	Cadillac.	Charlotte.	Cheboygan.	Clare.
23	Scrofula.....	7					1			1							
24	Syphilis.....	32							1			1					
25a	<i>Cancer—</i> Mouth.....	7													1	1	
25b	Stomach or liver.....	219	6	1	2	5	1	11	6	1		1					
25c	Intestines or rectum.....	49			1				1			1					
25d	Uterus.....	83	1	1		1		1	1			1		1			
25e	Breast.....	26		1			1									1	
25f	Skin.....	12						2	1								
25g	Other organs.....	157	4	1		2		7	9			1	1	2			
26-27	Rheumatism.....	64				2		3		1	1						
28	Diabetes.....	70				3		3		1		1				1	
29	Exophthalmic goitre.....	3															
30	Addison's disease.....	7								1							
31	Leukemia.....	6		1													
32	Anemia, chlorosis.....	41			1	1		1				1		1	1		
33	Other general diseases.....																
34	Alcoholism.....	22				1			3								
35-37	Chronic poisonings.....	3															
	LOCAL DISEASES.																
	III. DISEASES OF THE NERVOUS SYSTEM AND OF THE OR- GANS OF SENSE.																
38	Encephalitis.....	52		1	1		1	1	1	2							
39a	Simple meningitis.....	232	3		4	3		1	4	1	1	1				2	
39b	Cerebrospinal meningitis.....	119	1					1	1	1	1	2				3	1
42	Cerebral congestion, hemor.....	458	4	6	2	18		10	7	1	6	2	1	2	2	4	1
43	Cerebral softening.....	39						1					1		1		
44	Paralysis.....	239	4	2	2	3		7	3		1	1			1		
45	General paralysis of insane.....	65		1							1		1				
46	Other forms of insanity.....	27															
47	Epilepsy.....	37	1		1			2	1								
48	Convulsions.....	9															
49	Convulsions of infants.....	301	3		3	2	1	3	4		2		1	1	1		
50	Tetanus.....	9				1											
40-41 51-54	Other nervous diseases.....	136	1	4	1	1		6	5		1		1		3	2	1
	IV. DISEASES OF THE CIRCU- LATORY SYSTEM.																
55	Pericarditis.....	32	1			1	1			1						1	
56	Endocarditis.....	41				2						1				1	

by cities, during the year 1898. (Stillbirths included.)

to Ishpeming.

Coldwater.	Corunna.	Detroit.	Dowagiac.	East Tawas.	Eaton Rapids.	Escanaba.	Flint.	Gladstone.	Gladwin.	Grand Haven.	Grand Ledge.	Grand Rapids.	Greenville.	Harrison.	Hastings.	Hillsdale.	Holland.	Hudson.	Irona.	Iron Mountain.	Ironwood.	Ishpeming.	Classification No.
												1											23
1		19										4				1							24
		2					1																25a
3		72	2				1			1		18			1	1	1	1		1	2	2	25b
1	1	15	1				1			1		2	2			1							25c
4		21		2			1	1	1		2	12	1	1	1	1		1					25d
		8						1											1				25e
		1						1															25f
2		42	3				2	4				11				1	1		1	4	2	1	25g
		17	1		1		1				1	6						1	3				26-27
1		22		2								3				1	2	2					28
		2																					29
		1																					30
		2																					31
1		10										4	1			1			1				32
																							33
		5																					34
	1	1																					35-37
		4			1		1			2		8				1			1	1		1	38
		94				11	1			1		19				2				3	4	2	39a
	1	43						1				11			1	1				1	8	2	39b
		160	2		1	1	10			4	1	48	1		2	1	1	1	3	1	1	3	42
1		9			1		1								1						1		43
1	1	68	2			2	5				3	15			3	3	1	3	4				44
		6	1				4											1					45
		3					1					1						1		1	1		46
		5		1								3							1				47
		2										2											48
1		158	2	1		2	1	1	1	2		17				1	1	2	3	6	4	4	49
		2					1					3											50
		31	1	1	1		3					15	1			1	1				1	3	40-41 51-54
	1	6										4											55
		19										4								1			56

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	All cities.	Cities—Adrian												
			Adrian.	Albion.	Alpena.	Ann Arbor.	Au Sable.	Battle Creek.	Bay City.	Belding.	Benton Harbor.	Bessemer.	Big Rapids.	Cadillac.	Charlotte.
57	Organic heart disease.....	758	17	6	8	14		19	21		7	2	8	3	8
58	Angina pectoris.....	61	1	2		2		2	2				1	1	
59	Diseases of the arteries.....	37				3		2							
60	Embolism.....	8				1									
61	Varices, hemorrhoids.....	2													
62	Phlebitis.....	5						1							
63	Lymphangitis.....														
64	Other lymphatic diseases.....	2													
65	Hemorrhage.....	24						2							
66	Other circulatory diseases.....	7			1										
	V. DISEASES OF THE RESPIRATORY SYSTEM.														
67	Diseases of the nose.....	2													
68	Disease of larynx and thyroid..	26			1										
69	Acute bronchitis.....	207	1		10			2	8		1	2		2	4
70	Chronic bronchitis.....	101	2		1			3					3		
71	Broncho-pneumonia.....	133				1		5	4		1			1	3
72	Pneumonia.....	787	3	3	12	12	2	16	27		1	3	4	4	5
73	Pleurisy.....	41	1	1				2	1						
74	Congestion of lungs.....	65	1		1			2	1						
75	Gangrene of lungs.....	4													
76	Asthma and emphysema.....	47	1		1	1		2							
77	Other respiratory diseases...	50	1					2		1		1		1	1
	VI. DISEASES OF THE DIGESTIVE SYSTEM.														
78	Diseases of the mouth.....	10						1							
79	Diseases of pharynx and esophagus.....	9													
80	Ulcer of the stomach.....	23	1					1		1					1
81	Other diseases of stomach....	169	3	2	3	1		4	6		1		1	1	1
82	Cholera infantum.....	797	10	1	23	8	1	7	17	1	2	6	9	4	11
83	Diarrhea and enteritis.....	110	3	1	3	3	1	1	3	1		1			1
84	Dysentery.....	57		1					1	1			2		
86	Hernia and intestinal obstructions.....	107	1	1				1	3	1	1				1
85,87	Other diseases of intestines..	46				1		2	3					1	

by cities, during the year 1898. (Stillbirths included.)

to Ishpeming.

Coldwater.	Corunna.	Detroit.	Dowagiac.	East Tawas.	Eaton Rapids.	Escanaba.	Flint.	Gladstone.	Gladwin.	Grand Haven.	Grand Ledge.	Grand Rapids.	Greenville.	Harrison.	Hastings.	Hillsdale.	Holland.	Hudson.	Ionia.	Iron Mountain.	Ironwood.	Ishpeming.	Classification No.
6	2	218	7	1	2	7	8	1	....	4	2	79	2	....	8	4	2	5	2	3	1	7	57
1	11	....	....	1	....	1	....	1	....	....	5	....	....	....	1	1	1	....	....	....	....	58
....	17	....	....	....	....	....	....	....	....	....	9	....	....	....	2	....	....	....	....	....	....	59
....	2	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	60
....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	61
1	1	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	62
....	63
....	1	....	....	....	....	....	....	....	....	....	....	64
....	6	....	....	....	....	....	....	....	....	....	4	....	....	....	....	....	....	1	....	....	....	65
....	1	....	....	....	....	....	....	....	....	....	....	66
....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	67
....	10	....	....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	....	68
....	80	....	....	1	3	1	....	....	....	....	19	1	....	....	4	....	....	....	....	3	8	69
1	54	....	....	....	1	2	....	....	1	....	7	....	....	1	....	....	....	1	....	1	1	70
1	41	2	1	....	3	....	2	....	....	....	16	....	1	....	1	1	....	6	....	1	6	71
2	2	284	2	2	4	9	6	2	1	1	5	75	3	....	....	1	6	1	1	8	7	9	72
....	12	....	....	....	....	....	....	....	1	....	6	....	....	....	1	....	....	....	....	....	....	73
....	19	....	....	....	1	2	....	....	....	....	10	1	....	....	....	1	....	....	....	....	....	74
....	1	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	75
....	22	....	....	....	....	....	....	....	1	....	3	....	1	....	....	1	....	2	....	....	....	76
....	13	1	....	....	1	1	....	....	1	....	6	1	1	....	....	....	....	....	....	....	....	77
....	3	....	....	....	1	1	....	....	....	....	1	....	....	....	....	....	....	....	....	....	....	78
....	5	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	79
....	4	....	....	....	....	1	....	....	....	....	2	....	....	....	....	....	....	....	....	....	....	80
3	50	1	....	1	....	1	1	....	....	1	16	....	1	....	2	1	1	1	1	4	1	81
3	357	....	1	1	7	4	4	3	....	....	53	3	2	....	1	3	1	7	11	10	10	82
....	1	22	1	1	2	1	11	2	3	2	83
....	1	13	1	1	1	1	6	2	1	84
....	35	1	1	1	14	1	1	2	1	86
1	1	16	1	1	2	1	85, 87

CAUSES OF DEATH IN CITIES

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by cities, during the year 1898. (Stillbirths included.)

[illegible]

Classification No.	Causes of death, 1898.	All cities.	Cities—Adrian.														
			Adrian.	Albion.	Alpena.	Ann Arbor.	Au Sable.	Battle Creek.	Bay City.	Belding.	Benton Harbor.	Bessemer.	Big Rapids.	Cadillac.	Charlotte.	Cheboygan.	Clare.
132, 134, 136	Other diseases of the locomotor system.....	19		1		1		1									
137	XI. MALFORMATIONS.																
	Malformations.....	51	1					1				2	1			1	
	XII. DISEASES OF INFANCY.																
138a	Congenital debility.....	437	4	1	7	2		5	12		2	4		5		5	1
138b	Premature birth.....	211	2	1	2	2		2	7		1	1		2			8
139	Want of care.....	3															
140	Other diseases of infancy.....	5															
	XIII. DISEASES OF OLD AGE.																
141	Senile debility.....	223	3	1	5	2		5	3		2						2
	XIV. VIOLENCE.																
	A. Suicide—																
142a	Poison.....	29							2								
142b	Asphyxia.....	2															
142c	Strangulation.....	20				1											
142d	Drowning.....	9	1														
142e	Firearms.....	22	1			1		1									
142f	Cutting instruments.....	7															
142g	Fall from height.....	1															
142h	Crushing.....																
142i	Other methods.....	4				1										1	
	B. Accidents—																
143	Fractures.....	76	4	1	1	2		1				1				1	
144	Dislocations.....	3															
145a	Gunshot.....	16			1												
145b	Lightning.....	1															
145c	Mining accidents.....	32									2						
145d	Railroad accidents.....	91				3		3	2		2	1				1	
145e	Vehicles and horses.....	34							3								
146a	Fire (burn).....	41	1			2		1	1	1						1	
146b	Hot liquid (scald).....	6			1												
146c	Corrosive substance.....	2															
147a	Sunstroke.....	8			1								1				
147b	Freezing.....	4				1											
148	Accidental drowning.....	112	3		4												

by cities, during the year 1898. (Stillbirths included.)

to Ishpeming.

Cold water.	Corunna.	Detroit.	Dowagiac.	East Tawas.	Eaton Rapids.	Escanaba.	Flint.	Gladstone.	Gladwin.	Grand Haven.	Grand Ledge.	Grand Rapids.	Greenville.	Harrison.	Hastings.	Hillsdale.	Holland.	Hudson.	Ionia.	Iron Mountain.	Ironwood.	Ishpeming.	Classification No.
		6			1			1				1		1		2				1			132 134, 135
1		18	2	1	1							3				1				1	1	2	137
1	2	216	2		1	6		2		1		42				1	3	2	1	5	9	5	138a
	1	75		2			1			1	1	16				1	2			8	3	2	138b
		1										1								1			139
		2										1										1	140
	1	73	2			4	3			2	2	26	3			2		5	5	2		1	141
1		12				1						3											142a
																							142b
		4																					142c
		3																					142d
		8					1					2											142e
		1									1										1		142f
		1																					142g
																							142h
		1																					142i
		33					2	1				3				1	2		1	1		3	143
													1										144
		3				2						1											145a
																							145b
																				4	10	7	145c
		25			1	3	3	1		1		1								1		6	145d
		12									1	2	1				1						145e
1		7	1									1							1	3		1	146a
		2										1											146b
		1																					146c
		5																					147a
						1																	147b
		21	1			2		3			1	3				1			1				148
																							149
							1													2			159

Classification No.	Causes of death, 1898.	All cities.	Cities—Adrian														
			Adrian.	Albion.	Alpena.	Ann Arbor.	Au Sable.	Battle Creek.	Bay City.	Belding.	Benton Harbor.	Bessemer.	Big Rapids.	Cadillac.	Charlotte.	Cheboygan.	Clare.
132, 134, 136	Other diseases of the locomotor system.....	19		1			1		1								
137	XI. MALFORMATIONS.																
	Malformations.....	51	1					1				2	1			1	
138a	XII. DISEASES OF INFANCY.																
	Congenital debility.....	437	4	1	7	2		5	12		2	4		5		5	1
138b	Premature birth.....	211	2	1	2	2		2	7		1	1		2			8
139	Want of care.....	3															
140	Other diseases of infancy.....	5															
141	XIII. DISEASES OF OLD AGE.																
	Senile debility.....	223	3	1	5	2		5	3		2					2	
	XIV. VIOLENCE.																
	A. Suicide—																
142a	Poison.....	29							2								
142b	Asphyxia.....	2															
142c	Strangulation.....	20				1											
142d	Drowning.....	9	1														
142e	Firearms.....	22	1			1		1									
142f	Cutting instruments.....	7															
142g	Fall from height.....	1															
142h	Crushing.....																
142i	Other methods.....	4				1										1	
	B. Accidents—																
143	Fractures.....	76	4	1	1	2		1				1				1	
144	Dislocations.....	3															
145a	{ Gunshot.....	16			1												
145b	{ Lightning.....	1															
145c	{ Mining accidents.....	32									2						
145d	{ Railroad accidents.....	91				3		3	2	2	1					1	
145e	{ Vehicles and horses.....	34							3								
146a	{ Fire (burn).....	41	1			2		1	1	1						1	
146b	{ Hot liquid (scald).....	6			1												
146c	{ Corrosive substance.....	2															
147a	{ Sunstroke.....	8			1									1			
147b	{ Freezing.....	4				1											
148	Accidental drowning.....	112	3		4	1		2	2			2	1				
149	Starving.....																
150	Noxious gases.....	5															

CAUSES OF DEATH IN CITIES

87

by cities, during the year 1898. (Stillbirths included.)

to Ishpeming.

Cold water.	Corunna.	Detroit.	Dowagiac.	East Tawas.	Eaton Rapids.	Escanaba.	Flint.	Gladstone.	Gladwin.	Grand Haven.	Grand Ledge.	Grand Rapids.	Greenville.	Harrison.	Hastings.	Hillsdale.	Holland.	Hudson.	Ironla.	Iron Mountain.	Ironwood.	Ishpeming.	Classification No.
		6			1			1				1		1		2				1			132, 134, 136
1		18	2	1	1							3				1				1	1	2	137
1	2	216	2		1	6		2		1		42				1	3	2	1	5	9	5	138a
	1	75		2			1			1	1	16				1	2			8	3	2	138b
		1										1								1			139
		2										1										1	140
	1	73	2			4	3			2	2	26	3			2		5	5	2		1	141
1		12				1						3											142a
																							142b
		4																					142c
		3																					142d
		8					1					2											142e
		1									1										1		142f
		1																					142g
																							142h
		1																					142i
		33					2	1				3				1	2		1	1		3	143
													1										144
		3				2						1											145a
																							145b
																				4	10	7	145c
		25			1	3	3	1		1		1								1		6	145d
		19									1	2	1				1						145e
1		7	1									1							1	3		1	146a
		2										1											146b
		1																					146c
		5																					147a
						1																	147b
		21	1			2		3			1	3				1			1				148
																							149
							1													2			150

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Cities—Jackson													
		Jackson.	Kalamazoo.	Lansing.	Lapeer.	Ludington.	Manistee.	Marine City.	Marquette.	Marshall.	Mason.	Menominee.	Midland.	Monroe.	Mt. Clemens.
	ALL CAUSES.....	339	397	181	41	91	132	48	154	63	23	142	19	73	95
	Stillbirths (included in above).....	12	15	9	1	2	13	4	16	1	...	21	1	2	1
	GENERAL DISEASES.														
	I. EPIDEMIC DISEASES.														
1	Typhoid fever.....	3	5	6	...	1	2	3	1	...	...	3	...	...	2
1a	Typho-malarial fever.....	...	1	...	...	...	...	1	...	1	...	...	...	...	2
2	Typhus fever.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	Scurvy.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	Smallpox.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
5	Measles.....	...	3	...	...	...	...	...	...	...	...	...	...	...	...
6	Scarlet fever.....	...	...	...	...	5	...	...	...	...	...	...	...	...	2
7	Whooping cough.....	7	3	...	1	...	2	...	1	...	...	3	...	...	2
8a	Diphtheria.....	1	1	1	...	1	1	...	1	...	1	1	...	...	2
8b	Membranous croup.....	2	...	...	...	...	...	1	...	...	...	1	...	...	...
8c	Croup.....	...	...	...	...	...	...	1	2	...	...	...	...	...	...
9	Influenza.....	2	4	4	...	...	...	...	...	1	...	...	...	1	...
10	Milliary fever.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Asiatic cholera.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	Cholera nostras.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13a	Chicken pox.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13b	German measles.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13c	Mumps.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13d	Trichinosis.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	II. OTHER GENERAL DISEASES.														
14	Pyemia and septicemia.....	2	2	...	...	...	1	...	2	1	...	4	...	...	1
15	Glanders and farcy.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	Malignant pustule.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	Rabies.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	Relapsing fever.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19-20	Malaria.....	4	1	1	...	...	...	...	...	1	...	...	2	1	1
21	Pellagra.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	Tuberculosis—														
22a	Lungs.....	28	31	43	2	8	11	2	11	2	2	9	3	5	6
22b	Meninges.....	1	2	...	...	...	1	...	...	...	...	...	...	...	2
22c	Peritoneum.....	1	1	...	...	1	...	2	2	1	...	1	...	1	2
22d	Skin.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22e	Other organs.....	2	...	1	...	...	1	...	1	...	...	1	...	...	2
22f	General.....	4	4	3	...	2	6	2	1	...	...	2	...	3	...

CAUSES OF DEATH IN CITIES

91

by cities during the year 1898. (Stillbirths included.)

to Ypsilanti.

Muskegon.	Negaunee.	Niles.	North Muskegon.	Norway.	Owosso.	Petoskey.	Pontiac.	Port Huron.	Saginaw.	Sault Ste. Marie.	St. Clair.	St. Ignace.	St. Joseph.	St. Louis.	Stanton.	Sturgis.	Tawas City.	Three Rivers.	Traverse City.	West Bay City.	Wyandotte.	Ypsilanti.	Classification No.
256	72	67	5	66	107	55	152	266	530	140	52	34	64	29	11	42	17	34	132	181	79	89	
12	5	1	.....	7	3	7	4	22	35	9	1	1	3	.....	.....	2	1	.....	3	10	.....	1	
8	4	.....	.....	1	2	.....	2	2	9	2	5	.....	1	.....	.....	.....	1	1	2	1	4	1	1
4	.....	1	.....	.....	.....	1	.....	4	1	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1a
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2
.....	.....	.....	.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	3
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4
3	.....	1	.....	5	.....	1	.....	3	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	5
1	.....	.....	.....	.....	2	.....	4	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	6
1	1	.....	.....	.....	.....	.....	.....	10	.....	3	.....	5	.....	.....	.....	.....	.....	.....	.....	9	.....	.....	7
5	1	2	.....	1	7	.....	1	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8a
.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....	8b
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8c
3	1	.....	.....	3	.....	.....	1	1	5	.....	.....	.....	.....	.....	1	.....	3	1	.....	1	2	9	9
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	11
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	12
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13a
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13b
.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13c
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	13d
2	.....	1	1	.....	1	3	1	1	3	.....	1	.....	2	.....	.....	.....	.....	.....	1	3	2	.....	14
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	15
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	16
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	17
.....	.....	.....	.....	.....	.....	.....	.....	2	2	2	.....	1	.....	.....	.....	.....	1	.....	.....	2	.....	1	18
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	19-20
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	21
27	6	8	.....	3	9	2	13	19	37	11	3	5	1	2	.....	5	4	4	12	14	9	6	22a
1	.....	.....	.....	1	.....	.....	1	3	1	1	1	1	.....	.....	1	.....	.....	.....	.....	1	.....	.....	22b
2	.....	2	.....	1	1	.....	1	3	3	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	22c
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22d
1	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22e
3	.....	2	.....	1	1	.....	1	6	5	1	.....	2	3	1	.....	.....	.....	.....	1	4	.....	1	22f

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Cities—Jackson													
		Jackson.	Kalamazoo.	Lansing.	Lapeer.	Ludington.	Manistee.	Marine City.	Marquette.	Marshall.	Mason.	Menominee.	Midland.	Monroe.	Mt. Clemens.
	ALL CAUSES.....	339	397	181	41	91	132	48	154	63	23	142	19	73	95
	<i>Stillbirths</i> (included in above).....	12	15	9	1	2	13	4	16	1	—	21	1	2	1
	GENERAL DISEASES.														
	I. EPIDEMIC DISEASES.														
1	Typhoid fever.....	3	5	6	—	1	2	3	1	—	—	3	—	—	2
1a	Typho-malarial fever.....	—	1	—	—	—	—	1	—	1	—	—	—	—	2
2	Typhus fever.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	Scurvy.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	Smallpox.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Measles.....	—	3	—	—	—	—	—	—	—	—	—	—	—	—
6	Scarlet fever.....	—	—	—	—	5	—	—	—	—	—	—	—	—	2
7	Whooping cough.....	7	3	—	1	—	2	—	1	—	—	3	—	—	2
8a	Diphtheria.....	1	1	1	—	1	1	—	1	—	1	1	—	—	2
8b	Membranous croup.....	2	—	—	—	—	—	1	—	—	—	1	—	—	—
8c	Croup.....	—	—	—	—	—	—	1	2	—	—	—	—	—	—
9	Influenza.....	2	4	4	—	—	—	—	—	1	—	—	—	1	—
10	Milliary fever.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Asiatic cholera.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12	Cholera nostras.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13a	Chicken pox.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13b	German measles.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13c	Mumps.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13d	Trichinosis.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	II. OTHER GENERAL DISEASES.														
14	Pyemia and septicemia.....	2	2	—	—	—	1	—	2	1	—	4	—	—	1
15	Glanders and farcy.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	Malignant pustule.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	Rabies.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	Relapsing fever.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19-20	Malaria.....	4	1	1	—	—	—	—	—	1	—	—	2	1	1
21	Pellagra.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	<i>Tuberculosis—</i>														
22a	Lungs.....	28	31	13	2	8	11	2	11	2	2	9	3	5	6
22b	Meninges.....	1	2	—	—	—	1	—	—	—	—	—	—	—	2
22c	Peritoneum.....	1	1	—	—	1	—	2	2	1	—	1	—	1	2
22d	Skin.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22e	Other organs.....	2	—	1	—	—	1	—	1	—	—	1	—	—	2
22f	General.....	4	4	3	—	2	6	2	1	—	—	2	—	3	—

CAUSES OF DEATH IN CITIES

91

by cities during the year 1898. (Stillbirths included.)

to Ypsilanti.																							Classification No.
Muskegon.	Negaunee.	Niles.	North Muskegon.	Norway.	Owosso.	Petoskey.	Pontiac.	Port Huron.	Saginaw.	Sault Ste. Marie.	St. Clair.	St. Ignace.	St. Joseph.	St. Louis.	Stanton.	Sturgis.	Tawas City.	Three Rivers.	Traverse City.	West Bay City.	Wyandotte.	Ypsilanti.	
256	72	67	5	66	107	55	152	266	530	140	52	34	64	29	11	42	17	34	122	181	79	89	
12	5	1	----	7	3	7	4	22	35	9	1	1	3	----	----	2	1	----	3	10	----	1	
8	4	----	----	1	2	----	2	2	9	2	5	----	1	----	----	----	1	1	2	1	4	1	1
4	----	1	----	----	----	1	----	4	1	1	2	----	----	----	----	----	----	----	----	----	----	----	1a
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2
----	----	----	----	1	----	----	----	----	2	----	----	----	----	----	----	----	----	----	----	----	----	----	3
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	4
3	----	1	----	5	----	1	----	----	3	7	----	----	----	----	----	----	----	----	1	----	----	----	5
1	----	----	----	----	----	2	----	4	----	1	----	----	----	----	----	----	----	----	----	1	----	1	6
1	1	----	----	----	----	----	----	----	10	----	3	----	5	----	----	----	----	----	----	9	----	----	7
5	1	2	----	1	7	----	----	1	2	----	----	----	----	----	----	----	----	----	----	----	----	----	8a
----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	1	2	----	8b
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8c
3	1	----	----	----	3	----	1	1	5	----	----	----	----	----	1	----	3	1	----	1	2	9	10
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	11
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	12
----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	13a
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	13b
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	13c
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	13d
2	----	1	1	----	1	3	1	1	3	----	1	----	2	----	----	----	----	----	1	3	2	----	14
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	15
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	16
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	17
----	----	----	----	----	----	----	----	2	2	2	----	1	----	----	----	----	1	----	----	2	----	1	18
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	19-20	
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	21	
27	6	8	----	3	9	2	13	19	37	11	3	5	1	2	----	5	4	4	12	14	9	0	22a
1	----	----	----	1	----	----	1	3	1	1	1	1	----	----	----	1	----	----	----	1	----	----	22b
2	----	2	----	1	1	----	1	3	3	1	----	----	----	----	----	----	----	----	1	----	----	1	22c
----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	22d
1	----	----	----	----	----	----	----	2	1	----	----	----	----	----	----	----	----	----	----	----	----	----	22e
3	----	2	----	1	1	----	1	6	5	1	----	2	3	1	----	----	----	----	1	4	----	1	22f

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Cities—Jackson												
		Jackson.	Kalamazoo.	Lansing.	Lapeer.	Ludington.	Manistee.	Marine City.	Marquette.	Marshall.	Mason.	Menominee.	Midland.	Monroe.
23	Scrofula.....	1		2										
24	Syphilis.....		2											1
25a	<i>Cancer—</i> Mouth.....													
25b	Stomach or liver.....	7	4	3		2		2	4	1		4		1
25c	Intestines or rectum.....	1	3			1	1		1	1		1		
25d	Uterus.....	5	4	2		1			1					1
25e	Breast.....	2		1				1			1			
25f	Skin.....		1						1	1				
25g	Other organs.....	3	5	3			1		3	4	1			1
26-27	Rheumatism.....		4			1	1		1			1		1
28	Diabetes.....	2	2	1	2	1	1		1		1			1
29	Exophthalmic goitre.....											1		
30	Addison's disease.....	1							1					
31	Leukemia.....	1	1											
32	Anemia, chlorosis.....		1		1		1							2
33	Other general diseases.....													
34	Alcoholism.....	1	1				1					1		2
35-37	Chronic poisonings.....													
	LOCAL DISEASES.													
	III. DISEASES OF THE NERVOUS SYSTEM AND OF THE OR- GANS OF SENSE.													
38	Encephalitis.....	3	1	1		3								
39a	Simple meningitis.....	4	9	1			1	1	7			4		2
39b	Cerebrospinal meningitis.....	7	6	1			1		1					1
42	Cerebral congestion, hemor.....	11	19	7	4	2	4	1	5	2	1	4	1	2
43	Cerebral softening.....	3	4											1
44	Paralysis.....	13	12	5	2	1		1	2	3		1		1
45	General paralysis of insane.....	1	26	1										
46	Other forms of insanity.....		2	1										
47	Epilepsy.....		8	2	1									
48	Convulsions.....				1			1		1				1
49	Convulsions of infants.....	4		3		2	4	1		1	1	5		3
50	Tetanus.....													
40-41 51-54	Other nervous diseases.....		5	1		3	1		3	1				4
	IV. DISEASES OF THE CIRCU- LATORY SYSTEM.													
55	Pericarditis.....	2	2	1		1		1						
56	Endocarditis.....	3	3	1					1					

CAUSES OF DEATH IN CITIES

93

by cities, during the year 1898. (Stillbirths included.)

to Ypsilanti.															Classification No.
Muskegon.	Negaunee.	Niles.	North Muskegon.	Norway.	Owosso.	Petoskey.	Pontiac.	Port Huron.	Saginaw.	Sault Ste. Marie.	St. Clair.	St. Ignace.	St. Joseph.	St. Louis.	
1									1						23
														1	24
						1		1							25a
6	3	2			2			8	17	1		1		1	25b
1		3				2			4		2				25c
3		1			2			2	2					1	25d
	1					1		1	1				1		25e
					1			2							25f
4	1			2			3	3	8		1				25g
1					2		1	3	4					1	26-27
2	1				1	1		2	3						28
															29
	1			1										1	30
		1				1		3	2	2			2		31
															32
							1	2	1			1			33
							1							1	34
															35-37
3					2		1	1	5		2	1		1	38
2	2			1	2		3	4	10	1	1	2	1	1	39a
1	1			1			3	7				2		2	39b
16	1	2	1	1	2	1	8	8	16	3	2		2	1	42
1					1		2	1	4				1	3	43
2		4			5	3	4	6	9			1	3	1	44
					1	1	8		2						45
							11	1							46
	1	1					1		4						47
													1		48
4	2	1		1	3	1	3	2	13	7	2		3	2	49
2															50
2	2	2					3	1	12	1		1		1	40-41 51-54
2		1						3							55
				2				1							56

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Cities—Jackson													
		Jackson.	Kalamazoo.	Lansing.	Lapeer.	Ludington.	Manistee.	Marine City.	Marquette.	Marshall.	Mason.	Menominee.	Midland.	Monroe.	Mt. Clemens.
57	Organic heart disease.....	29	21	26	1	2	7	5	5	6	3	7	1	6	5
58	Angina pectoris.....	5	2		2				1			1		1	
59	Diseases of the arteries.....		1												
60	Embolism.....		1												
61	Varices, hemorrhoids.....														
62	Phlebitis.....														
63	Lymphangitis.....														
64	Other lymphatic diseases.....				1										
65	Hemorrhage.....	2				1	1								
66	Other circulatory diseases.....		1		1			1							
	V. DISEASES OF THE RESPIRATORY SYSTEM.														
67	Diseases of the nose.....														
68	Disease of larynx and thyroid.....		1	1			1								
69	Acute bronchitis.....	2	2		1	1	5		6	3	1	5		1	
70	Chronic bronchitis.....		8						1		1			2	
71	Broncho-pneumonia.....		2						4			3		1	
72	Pneumonia.....	30	19	12	2	12	5	2	9	15	2	7	1	5	4
73	Pleurisy.....	2	3					1	1	1		1			2
74	Congestion of lungs.....	4	1	3	1		2		1						
75	Gangrene of lungs.....													1	
76	Asthma and emphysema.....			2		1								1	2
77	Other respiratory diseases.....	4	1						2						
	VI. DISEASES OF THE DIGESTIVE SYSTEM.														
78	Diseases of the mouth.....			2											
79	Diseases of the pharynx and esophagus.....					1									1
80	Ulcer of the stomach.....		3				1							1	1
81	Other diseases of the stomach.....	5	8	5	1	2	1			2		3	2		
82	Cholera infantum.....	17	18	5		3	8	4	5			19	1	4	3
83	Diarrhea and enteritis.....	5	1	3	1	3	2	1	2		1	1		1	
84	Dysentery.....	1	5	2	1							1		1	
86	Hernia and intestinal obstructions.....	5	3	1					2	1			2	1	
85,87	Other diseases of intestines.....		3	1		1				1				1	

by cities, during the year 1898. (Stillbirths included.)

to Ypsilanti.																							Classification No.
Muskegon.	Negaunee.	Niles.	North Muskegon.	Norway.	Owosso.	Petoskey.	Pontiac.	Port Huron.	Saginaw.	Sault Ste. Marie.	St. Clair.	St. Ignace.	St. Joseph.	St. Louis.	Stanton.	Sturgis.	Tawas City.	Three Rivers.	Traverse City.	West Bay City.	Wyandotte.	Ypsilanti.	
12	3	4	1	---	5	1	9	13	30	7	4	1	1	3	2	4	1	6	11	7	6	11	57
2	---	2	---	---	---	---	1	2	5	1	---	---	---	---	---	---	---	---	---	1	---	1	58
1	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	59
1	---	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---	---	---	---	---	---	60
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	61
---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	62
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	63
---	---	---	---	---	---	---	---	---	2	2	---	---	1	---	---	---	1	---	---	1	---	---	64
---	---	---	1	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	65
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	66
---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	67
1	1	---	---	1	1	---	---	2	2	1	---	---	1	---	---	---	---	---	---	1	---	---	68
2	---	1	---	---	2	1	1	5	6	4	---	---	1	---	---	---	---	1	2	3	1	69	
1	---	---	---	---	1	---	---	1	2	1	---	---	1	---	---	---	---	---	3	---	---	---	70
5	---	---	1	2	2	---	---	2	4	6	1	---	---	---	---	---	---	1	1	---	---	---	71
9	3	3	---	3	5	6	15	13	27	7	2	3	---	1	---	4	---	4	6	12	3	72	
2	---	---	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	---	1	---	---	---	73
1	---	1	---	1	2	---	---	2	1	---	---	---	---	---	---	1	2	2	1	---	---	---	74
---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	75
---	1	---	---	---	1	---	2	---	---	---	---	---	---	---	---	---	---	---	---	2	---	---	76
4	---	---	---	---	1	1	1	---	---	1	---	---	---	---	---	---	---	2	---	---	---	1	77
---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	78
1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	79
1	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	2	1	---	180
4	---	---	---	---	1	1	3	3	11	1	---	---	---	2	1	---	1	1	---	---	1	---	181
13	11	1	---	12	9	2	4	16	16	12	2	1	6	1	---	4	2	---	3	8	2	---	282
2	---	1	---	---	---	---	4	2	4	1	1	---	1	---	---	---	---	---	4	1	1	---	283
2	---	---	---	---	---	---	4	1	2	---	---	---	---	---	---	---	---	---	3	1	---	---	184
4	1	1	---	1	1	---	2	4	2	1	1	---	1	1	---	---	---	---	1	2	3	---	86
2	---	---	---	---	---	---	---	1	1	---	---	1	---	---	---	---	---	---	1	1	1	---	185, 87

CAUSES OF DEATH IN CITIES

97

by cities, during the year 1898. (Stillbirths included.)

to Ypsilanti.																							Classification No.	
Muskegon.	Negaunee.	Niles.	North Muskegon.	Norway.	Owosso.	Petoskey.	Pontiac.	Port Huron.	Saginaw.	Sault Ste. Marie.	St. Clair.	St. Ignace.	St. Joseph.	St. Louis.	Stanton.	Sturgis.	Tawas City.	Three Rivers.	*Traverse City.	West Bay City.	Wyandotte.	Ypsilanti.		
									1														88	
	1							1		1	1		1		1	1	1						1	90
1	1	1			1		1	3	10		2						1	1		1	2	1		89, 91, 92
2	1				2		3	2	9			1				2				5	5	3	1	93
1																								94
2									3			1											1	95
					1			1	1											1	1			96
5	2	2		1	6	1	2	13	15	4	2		2	2			1				3	7	3	97
1		1						1	2			1								1				98-100
																								101
1							1	2	4				1					1			1		3	102
							2		1															103-106
								1	3		1													111
																								{ 109, 110, 112
		1							1															113
					1				4												1			{ 107, 108, 114, 115
	1			1				2	2	3		2	1								4		1	{ 116-118, 123-124
2							1		1	1										1	1			{ 119, 120, 122
				1		3		1	2		1										1			121
																								125
	1	1		1	1				1															126
							1	1												1	1			127
	1								1					1										128
									1											1				129
																								130
									1	1														131
																								133

TABLE VII.—CONTINUED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898.	Cities—Jackson														
		Jackson.	Kalamazoo.	Lansing.	Lapeer.	Ludington.	Manistee.	Marine City.	Marquette.	Marshall.	Mason.	Menominee.	Midland.	Monroe.	Mt. Clemens.	Mt. Pleasant.
132, 134, 136	Other diseases of the loco- motor system.....									1						
	XI. MALFORMATIONS.															
137	Malformations.....	1	1				1		1							
	XII. DISEASES OF INFANCY.															
138a	Congenital debility.....	7	7	4		2	5	3	5			3		1	1	
138b	Premature birth.....	5	7	2			3		3		2	5		2	7	
139	Want of care.....															
140	Other diseases of infancy.....						1									
	XIII. DISEASES OF OLD AGE.															
141	Senile debility.....	8	1	5		3		2	1			1				1
	XIV. VIOLENCE.															
	A. Suicide—															
142a	Polson.....		1								1				1	
142b	Asphyxia.....	2														
142c	Strangulation.....		1				1				1			1	3	
142d	Drowning.....															
142e	Firearms.....		2												1	
142f	Cutting instruments.....			1					1							
142g	Fall from height.....															
142h	Crushing.....															
142i	Other methods.....															
	B. Accidents—															
143	Fractures.....	2	6						1					2		
144	Dislocations.....															
145a	Gunshot.....	1	1						1			1				
145b	Lightning.....								1							
145c	Mining accidents.....															
145d	Railroad accidents.....	4	1			2	1	1			1		1	1		
145e	Vehicles and horses.....	1	3												1	
146a	Fire (burn).....	1	5	1					1							
146b	Hot liquid (scald).....	1														
146c	Corrosive substance.....															
147a	Sunstroke.....	1														
147b	Freezing.....					1										
148	Accidental drowning.....	3	1	4			4	6	1	2		1	1	2	2	
149	Starving.....															
150	Noxious gases.....	1							1							

CAUSES OF DEATH IN CITIES

99

by cities, during the year 1898. (Stillbirths included.)

[illegible]

TABLE VII.—CONCLUDED.—*Causes of death in Michigan,*

Classification No.	Causes of death, 1898	Cities—Jackson											
		Jackson.	Kalamazoo.	Lansing.	Lapeer.	Ladington.	Manistee.	Marine City.	Marquette.	Marshall.	Mason.	Menominee.	Midland.
151	Other accidental poisons.....	2	1	1								1	2
152a	Other accidents.....	7	11	4	1	3	2		2			2	1
152b	<i>C. Homicide—</i> Homicides.....		1	2	1								
	XV. CAUSES ILL-DEFINED.												
153	Exhaustion, cachexia, debility.....	1	5	3		2				2		1	1
154	Fever, inflammation.....								1				2
155a	Dropsy.....	1			2								1
155b	Heart failure.....		3	1		1	1			1	1		2
156	Asphyxia, cyanosis.....												
157	Sudden death.....												
158	Abdominal tumor.....				1				1				
159	Other tumors.....												
161	Unknown, not specified causes.....	1		1		2	9			1		3	1

by cities, during the year 1898. (Stillbirths included.)

to Ypsilanti.																							Classification No.
Muskegon.	Negaunee.	Niles.	North Muskegon.	Norway.	Owosso	Petoskey.	Pontiac.	Port Huron.	Saginaw.	Sault Ste. Marie.	St. Clair.	St. Ignace.	St. Joseph.	St. Louis.	Stanton.	Sturgis.	Tawas City.	Three Rivers.	Traverse City.	West Bay City.	Wyandotte.	Ypsilanti.	
1									1														151
4		1			2		4	4	8	2	1					2			3	3			152a
									3					1							2		152b
2	1	2			2		5	1	4		1		1					1		4	2		153
																							154
1							1	1	2	1	1									3		1	155a
2					1			1	4					1	1	1	1	1	1	1		2	155b
								1					1										156
									1										1				157
									1														158
1		1							1										1	1			159
2	1	1		1	2		1	2	3	6			1	1		1	1	1	1			2	161

NOTE ON DEATHS RETURNED FROM NON-REGISTRATION TOWNSHIPS FOR 1898.

The registration law provides that the filing of certificates of death and the issuing of burial or removal permits based thereon shall be applicable only to townships having a population of five persons to the square mile, according to the last Federal or State census, and that townships below this limit shall remain under the old registration law, which provides for an enumeration of deaths by the supervisor and a return by him to the county clerk, between the dates of April 10 and June 1, and a return by the county clerk to the Secretary of State of a transcript of the same on or before the first day of September in each year, the deaths covering the previous calendar year. As these returns are few in number, presumably quite imperfect, and are not based, so far as regards the statements of cause of death, upon physicians' certificates, it seemed inexpedient to delay the appearance of the Reports under the new law, which were compiled before the arrival of these returns at the State Department, in order to include the small additional number. It may be said that quite a number of these non-registration districts have expressed a desire to come under the operation of the law requiring burial permits, and some of them, indicated by asterisks, have made regular monthly reports which have been compiled with those made by the registrars of the regular registration districts. It is believed that the general application of the new law to every township in the State would work no hardship, as was feared at first, and would be desirable in order to remove this small residue of non-reporting districts. Following is a statement, by counties, of the deaths so returned for the year 1898, with population by State census of 1894:

ALCONA COUNTY, 1,352. Caledonia, 233; Curtis, 345; Hawes, 292; Mikado, 276; Millen, 118; Mitchell, 88.
 ALGER COUNTY, 1,385. Au Train, 280—1 death; Burt, 240—32 deaths; Mathias, 212—2 deaths; Munising, 367—(2 deaths reported by village); Onota, 138—no deaths; Rock River, 148—1 death; Limestone, 1 death.
 ALPENA COUNTY, 249. Ossineke, 249.
 ARENAC COUNTY, 31. Turner, 31.
 BABAGA COUNTY, 561. Arvon, 288; Covington, 88; Spur, 185.
 BENZIE COUNTY, 171. Lake, 171.
 CHARLEVOIX COUNTY, 128. Hudson, 128.
 CHEBOYGAN COUNTY, 1,485. Burt, 461; Ellis, 163; Forest, 154; Grant, 490; Waverly, 110—3 deaths; Wilmot, 107.
 CHIPPEWA COUNTY, 1,665. Dafter, 498; Drummond, 408—10 deaths; Rudyard, 240; Trout Lake, 89; White Fish, 430—1 death.
 CLARE COUNTY, 653. Franklin, 178—no deaths; Frost, 174; Hayes, 171—2 deaths; Summerfield, 130—1 death.
 CRAWFORD COUNTY, 1,145. Ball, 120; Beaver Creek, 108; Blaine, 97; Center Plains, 152; Frederick, 253; Grove, 95; Maple Forest, 212; South Branch, 108.
 DELTA COUNTY, 1,221. Baldwin, 460; Escanaba, 402; Maple Ridge, 359.
 DICKINSON COUNTY, 1,753. Breen, 347; Felch, 589; Sagola, 360; Waucedah, 457.
 EMMET COUNTY, 379. Bliss, 239; Eggleston, 140.
 GLADWIN COUNTY, 896. Bentley, 268; Billings, 122; Buckeye, 254; Clement, 91; Sherman, 161.
 GOGEBIC COUNTY, 1,422. Bessemer, 498; Ironwood, 238; Marenisco, 144; Watersmeet, 542.
 HOUGHTON COUNTY, 231. Laird, 231.
 IOSCO COUNTY, 790. Oscoda, 225; Plainfield, 242; Wilber, 323.
 IRON COUNTY, 931. Atkinson, 566—3 deaths; Hematite, 264—3 deaths; Mansfield, 101—1 death.
 KALKASKA COUNTY, 479. Cold Springs, 123—2 deaths; Garfield, 165; Glade, 122; Oliver, 69—1 death.
 KEWEENAW COUNTY, 139. Grant, 139.
 LAKE COUNTY, 243. Lake, 89; Pleasant Plains, 71; Webber, 83.
 LUCE COUNTY, 1,212. Columbus, 57; Lakefield, 191; McMillan, 776; Pentland, 188.
 MACKINAC COUNTY, 2,225. Brevort, 291—2 deaths; Garfield,* 442; Hendricks, 204—2 deaths; Holmes,* 175; Marquette, 382—2 deaths; Moran, 370—4 deaths; Portage, 158; St. Ignace,* 203; Bois Blanc,—3 deaths; Sherwood,—2 deaths.
 MARQUETTE COUNTY, 2,178. Ely, 531; Forsyth, 442; Humboldt, 263; Marquette, 220; Richmond, 63; Sands, 248; Skandia, 268; Turin, 143; West Branch.
 MASON COUNTY, 355. Branch, 355.
 MENOMINEE COUNTY, 414. Holmes, 414.
 MIDLAND COUNTY, 167. Greendale, 167; Mills.
 MISSAUKEE COUNTY, 970. Bloomfield, 154; Aetna, 328; Norwich, 325; West Branch, 163.
 MONTMORENCY COUNTY, 1,357. Briley, 180; Hillman, 361; Montmorency, 266; Rust, 291; Vienna, 130; Wheatfield, 130.
 OCEANA COUNTY, 156. Otto, 156.
 OGEMAW COUNTY, 820. Beaver Lake, 97; Foster, 136—2 deaths; Goodar, 172; Hill, 77—1 death; Logan, 95; Mills, 81; Ogemaw, 162.
 ONTONAGON COUNTY, 1,166. Bohemia, 172; Carp Lake, 53; Ontonagon,* 421; Rockland,* 520.
 OSCODA COUNTY, 1,623. Atherton, 69; Comins, 410—1 death; Elmer, 351; Greenwood, 79; Harmon, 183; Mentor, 449; Mount Pinus, 85.
 OTSEGO COUNTY, 824. Charlton, 131; Chester, 212; Dover, 184; Hayes, 297.
 PRESQUE ISLE COUNTY, 1,139. Allis, 288; Bearinger, 270; Bismarck, 134; Case, 271; Presque Isle, 178.
 ROSCOMMON COUNTY, 841. Denton, 65; Gerrish, 64; Markey, 39; Nester, 211; Richfield, 79; Roscommon, 186; St. Helens, 297.
 SCHOOLCRAFT COUNTY, 2,258. Doyle,* 621; Germfask, 210; Harrison, 558; Manistique,* 353; Seney, 516.
 WEXFORD COUNTY, 157. Slagle,* 157.

The total population of non-registration townships was 35,274, from which 2,892 may be deducted for districts regularly reporting under the new law, leaving a remainder of 32,382 from which only the returns of deaths from supervisors were received. There were 83 deaths so reported, 32 of these coming from Grand Marais village, Burt township, Alger county.

* These districts made monthly reports.

TABLES
RELATING TO
MARRIAGES
IN
MICHIGAN
DURING THE
YEAR 1898

PRIMARY TABLES RELATING TO MARRIAGES IN MICHIGAN DURING THE YEAR 1898.

TABLE I.—*Marriages in Michigan, by months and counties, during the year 1898.*

TABLE II.—*Persons married in Michigan, by ages, counties and sex, during the year 1898.*

TABLE III.—*Marriages and persons married in Michigan, by nativity and counties, during the year 1898.*

TABLE IV.—*Marriages in Michigan, by ages of males and females married, during the year 1898.*

TABLE V.—*Probate marriages in Michigan, by ages of males and females married, during the year 1898.*

NOTE.—*Secondary tables, containing marriage rates and other ratios, and comparative tables, displaying the facts relative to marriages in Michigan for the year 1898 in connection with previous years and other States and countries, may be found on preceding pages of this Report, together with the descriptive text.*

TABLE I.—Marriages in Michigan, by months and counties, during the year 1898.

State and counties.	Year 1898.	Months, 1898.												
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
STATE.....	20,138	1,397	1,302	1,400	1,613	1,482	2,056	1,315	1,487	1,793	2,043	2,264	1,979	7
Alcona.....	37	1	-----	3	3	2	5	5	5	1	8	2	2	-----
Alger.....	66	3	1	3	7	7	6	5	5	10	11	5	3	-----
Allegan.....	354	20	19	29	34	24	33	23	22	25	44	42	39	-----
Alpena.....	141	6	11	8	12	12	13	9	11	14	17	16	12	-----
Antrim.....	131	8	8	23	10	8	11	12	13	8	11	12	7	-----
Arenac.....	82	9	4	5	7	6	4	3	12	7	6	6	13	-----
Baraga.....	18	3	1	2	-----	-----	-----	1	1	3	3	2	2	-----
Barry.....	228	23	24	7	21	20	20	6	16	17	19	23	32	-----
Bay.....	495	41	29	18	46	47	41	33	46	51	53	55	34	1
Benzie.....	88	6	3	8	10	5	6	8	11	6	10	6	9	-----
Berrien.....	444	24	34	29	32	35	32	35	45	33	54	45	46	-----
Branch.....	255	17	14	24	27	13	19	13	26	17	20	37	28	-----
Calhoun.....	432	28	23	32	42	17	47	23	21	40	55	50	45	-----
Cass.....	230	19	21	13	21	20	18	15	17	17	25	17	17	-----
Charlevoix.....	102	7	7	12	4	6	13	9	8	6	11	13	-----	-----
Cheboygan.....	138	7	12	10	9	7	13	4	14	10	19	16	17	-----
Chippewa.....	143	12	11	12	10	8	13	10	17	11	12	17	10	-----
Clare.....	67	1	3	6	11	7	6	5	5	4	6	4	9	-----
Clinton.....	252	17	22	13	18	14	18	14	17	24	30	38	27	-----
Crawford.....	27	2	4	4	2	1	2	-----	1	1	2	5	3	-----
Delta.....	166	9	8	8	15	16	30	15	15	13	15	15	7	-----
Dickinson.....	118	11	7	4	15	11	12	5	12	8	14	14	5	-----
Eaton.....	322	24	17	27	26	21	26	15	20	33	25	40	48	-----
Emmet.....	148	17	9	5	6	17	14	6	15	10	17	13	19	-----
Genesee.....	391	21	25	25	27	29	43	26	31	34	43	47	40	-----
Gladwin.....	39	1	2	5	4	4	4	2	1	5	3	2	6	-----
Gogebic.....	150	7	12	5	16	10	6	15	17	14	19	26	3	-----
G'd Traverse.....	206	17	15	10	17	14	27	18	13	13	14	22	25	1
Gratiot.....	319	27	27	28	21	20	20	15	26	30	23	28	54	-----
Hillsdale.....	287	27	15	23	15	23	26	18	19	21	29	33	38	-----
Houghton.....	509	26	29	23	46	49	53	52	49	49	40	55	38	-----
Huron.....	248	17	20	15	15	12	20	11	14	23	28	37	36	-----
Ingham.....	407	34	21	39	30	33	33	20	31	38	37	41	50	-----
Ionia.....	297	18	20	19	19	17	26	19	25	33	37	37	27	-----
Iosco.....	73	5	2	6	5	7	5	13	7	5	6	7	5	-----
Iron.....	41	2	3	3	2	1	6	6	4	2	1	9	2	-----
Isabella.....	218	19	15	8	18	19	16	12	23	21	23	18	26	-----
Jackson.....	496	21	36	37	37	34	52	25	27	51	55	70	51	-----
Kalamazoo.....	433	32	30	41	21	29	53	35	27	33	47	43	42	-----
Kalkaska.....	63	2	6	7	5	4	7	5	2	4	6	5	10	-----
Kent.....	1,223	71	87	100	102	105	128	70	85	119	111	127	118	-----
Keweenaw.....	10	1	-----	-----	-----	1	2	-----	2	4	-----	-----	-----	-----
Lake.....	40	5	1	3	4	6	1	4	3	4	4	2	3	-----
Lapeer.....	241	15	16	19	18	15	24	11	24	25	15	32	27	-----
Leelanau.....	80	2	4	4	8	8	5	5	9	11	8	11	5	-----
Lenawee.....	460	34	22	43	38	33	47	29	36	42	41	42	53	-----
Livingston.....	179	11	14	20	15	14	10	9	10	18	19	24	15	-----
Luce.....	19	2	2	1	1	-----	2	2	1	-----	4	-----	4	-----
Mackinac.....	51	4	2	4	5	-----	8	6	5	5	5	5	2	-----
Macomb.....	269	23	25	11	24	30	19	15	12	22	26	33	29	-----
Manistee.....	192	13	15	11	11	11	30	16	14	27	16	11	17	-----
Marquette.....	284	17	23	17	20	25	30	25	17	26	23	45	16	-----
Mason.....	130	11	3	8	8	10	19	11	9	14	14	11	12	-----
Mecosta.....	182	13	12	14	24	11	18	14	12	13	12	16	23	-----
Menominee.....	130	7	6	7	23	8	20	6	8	13	16	12	4	-----
Midland.....	121	7	12	12	9	10	9	11	5	12	10	9	15	-----
Missaukee.....	66	7	3	5	5	6	10	3	4	8	6	5	4	-----
Monroe.....	304	20	25	19	25	25	33	10	9	29	38	46	25	-----
Montcalm.....	302	22	12	29	19	19	33	23	19	23	33	30	40	-----
Montmorency.....	20	2	2	-----	1	2	4	2	2	-----	3	-----	2	-----

TABLE I.—CONCLUDED.—*Marriages in Michigan, by months and counties, during the year 1898.*

Counties.	Year 1898.	Months, 1898.											
		Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec. Unk.
Muskegon.....	262	18	21	21	18	10	28	17	18	25	27	33	25 1
Newaygo.....	155	10	8	16	9	8	17	13	12	13	21	9	19
Oakland.....	318	20	21	33	27	19	40	14	21	20	32	33	38
Oceana.....	157	13	9	11	15	11	13	13	12	13	15	15	17
Ogemaw.....	65	3	2	7	9	6	2	8	3	4	6	7	8
Ontonagon.....	27	2		2	4	2	2	2	1	4	4	1	3
Osceola.....	141	11	5	14	18	10	8	13	9	8	11	16	18
Oscoda.....	7	1			1			3		1	1		
Otsego.....	53	2	6	7	2	1	7	5	6	2	6	5	4
Ottawa.....	330	17	25	26	35	36	27	19	30	21	29	37	28
Presque Isle.....	61	3	2	4	2	10	5	6	6	1	11	6	5
Roscommon.....	16		1		1		2	2	2	3		2	3
Saginaw.....	656	52	41	47	51	49	73	35	57	64	60	71	56
Sanilac.....	295	24	30	25	14	19	15	18	13	28	26	41	42
Schoolcraft.....	58	5	2	3	2	3	3	7	8	6	6	4	9
Shiawassee.....	335	27	26	25	29	16	36	25	19	31	27	32	42
St. Clair.....	463	44	32	30	42	27	49	38	29	32	34	58	48
St. Joseph.....	213	21	14	14	13	14	22	14	11	19	21	20	30
Tuscola.....	290	26	13	22	24	23	32	19	23	32	22	23	31
Van Buren.....	311	18	26	30	22	12	28	22	19	25	27	38	44
Washtenaw.....	358	26	25	24	25	22	31	23	23	36	38	43	42
Wayne.....	2,444	167	127	100	190	208	346	145	173	234	304	310	136
Wexford.....	169	9	10	13	14	8	19	16	15	11	18	19	17

TABLE II.—Persons married in Michigan, by ages, counties and sex, during the year 1898.

State and counties.	Total marriages, 1898.	Sex.	Number of persons married, by periods of age, 1898.															Unk.
			Under 20 years.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 to 84.		
STATE....	20,138	{ Total. Males. Fem..	5,991 350 5,641	16,120 7,676 8,444	9,208 6,171 3,037	3,629 2,484 1,145	2,013 1,322 691	1,053 665 388	804 499 305	542 343 199	348 222 126	271 183 88	171 126 45	58 51 7	36 32 4	12 11 1	20 3 17	
Alcona.....	37	{ Total. Males. Fem..	13 1 12	30 14 16	14 12 2	8 5 3	2 1 1	4 2 2	3 2 1									
Alger.....	66	{ Total. Males. Fem..	27 13 14	37 16 21	40 30 10	16 13 3	5 2 3	2 1 1	1 1 1	4 3 1								
Allegan.....	354	{ Total. Males. Fem..	121 14 107	287 139 148	131 92 39	63 40 23	38 27 11	18 11 7	17 10 7	11 5 6	9 6 3	4 3 1	6 3 2	3 4 1				
Alpena.....	141	{ Total. Males. Fem..	45 1 44	119 55 64	65 40 25	35 30 5	11 9 2	4 3 1	3 2 1									
Antrim.....	131	{ Total. Males. Fem..	59 2 57	97 56 41	49 36 13	25 16 9	13 9 4	18 9 9	9 6 3	4 2 3	2 1 1	1 1 1						
Arenac.....	82	{ Total. Males. Fem..	42 1 41	62 38 24	28 21 7	10 7 3	6 4 2	3 2 1	6 5 1	2 1 1	1 1 1	2 1 1					2	
Baraga.....	18	{ Total. Males. Fem..	10 1 9	9 4 5	8 6 2	4 3 1	1 1 —	3 2 1				1 1 —						
Barry.....	228	{ Total. Males. Fem..	78 4 74	201 102 99	114 80 34	15 9 6	17 13 4	6 5 1	8 4 4	10 6 4	3 2 1	2 1 1	1 1 1					
Bay.....	495	{ Total. Males. Fem..	154 5 149	426 208 218	206 148 58	67 42 25	50 31 19	26 18 8	28 18 10	17 12 5	10 8 2	4 4 1	2 1 1					
Benzie.....	88	{ Total. Males. Fem..	36 1 35	56 28 28	36 26 10	17 12 5	12 8 4	8 6 2	7 4 3	1 1 1	2 1 1		1 1 —					
Berrien.....	444	{ Total. Males. Fem..	154 13 141	354 183 171	163 108 55	87 53 34	52 36 16	30 21 9	21 11 10	8 5 3	7 6 2	2 5 2	2 1 1	2 1 —				
Branch.....	255	{ Total. Males. Fem..	76 4 72	220 117 103	83 55 28	46 27 19	30 18 12	15 10 7	15 8 5	6 3 3	8 5 3	5 4 1	1 1 3				2	
Calhoun.....	432	{ Total. Males. Fem..	115 9 106	328 159 169	185 123 62	68 45 23	53 23 30	37 22 15	19 12 5	20 10 8	13 9 4	5 3 2	12 3 7	3 5 —	3 3 1	4 2 —	2 2 —	
Cass.....	220	{ Total. Males. Fem..	70 3 67	188 99 89	78 54 24	38 22 16	24 17 7	11 5 6	10 6 4	7 4 3	6 5 1	3 1 2	3 1 —	2 1 —				
Charlevoix...	102	{ Total. Males. Fem..	42 1 41	83 42 41	41 31 10	10 8 2	9 8 1	6 4 2	5 2 3	4 2 —	— — —	1 1 —	2 1 1	1 — —				
Cheboygan...	138	{ Total. Males. Fem..	63 2 61	108 59 49	53 36 17	25 21 4	14 9 5	7 5 2	4 4 —	2 2 —								
Chippewa....	143	{ Total. Males. Fem..	40 2 38	101 45 56	65 42 23	37 30 7	22 10 12	5 3 2	7 4 3	6 5 1	2 2 1	1 — —						

TABLE II.—CONTINUED.—Persons married, by ages, counties and sex, 1898.

MARRIAGES

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TABLE II.—CONTINUED.—Persons married, by ages, counties and sex, 1898.

Counties.	Total marriages, 1898.	Sex.	Number of persons married, by periods of age, 1898.														
			Under 20 years.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +.	Unk.
Iron	41	Total.	13	30	20	9	6	4	—	—	—	—	—	—	—	—	—
		Males.	13	18	12	5	4	2	—	—	—	—	—	—	—	—	—
		Fem.	—	12	8	4	2	2	—	—	—	—	—	—	—	—	—
Isabella	218	Total.	96	164	89	31	12	12	13	4	3	9	3	—	—	—	—
		Males.	6	96	60	19	10	7	8	1	2	7	2	—	—	—	—
		Fem.	90	68	29	12	2	5	5	3	1	2	1	—	—	—	—
Jackson	496	Total.	133	369	242	91	55	36	32	16	6	5	5	2	—	—	—
		Males.	16	164	161	53	33	24	21	8	5	4	5	2	—	—	—
		Fem.	117	205	81	38	22	12	11	8	1	1	—	—	—	—	—
Kalamazoo	433	Total.	81	342	212	108	60	21	17	8	4	4	6	2	1	—	—
		Males.	2	155	131	67	35	13	13	5	4	2	3	2	1	—	—
		Fem.	79	187	81	41	25	8	4	3	—	—	—	—	—	—	—
Kalkaska	63	Total.	29	46	30	11	5	2	—	—	—	—	—	—	—	—	—
		Males.	1	23	22	10	4	—	—	3	—	—	—	—	—	—	—
		Fem.	28	23	8	1	1	2	—	—	—	—	—	—	—	—	—
Kent	1,223	Total.	303	996	584	205	110	80	60	38	25	16	16	8	3	2	—
		Males.	21	468	365	141	71	52	35	23	16	10	10	6	3	2	—
		Fem.	282	528	219	64	39	28	25	15	9	6	6	2	—	—	—
Keweenaw	10	Total.	3	10	3	1	1	—	—	—	2	—	—	—	—	—	—
		Males.	—	5	2	1	1	—	—	—	1	—	—	—	—	—	—
		Fem.	3	5	1	—	—	—	—	—	1	—	—	—	—	—	—
Lake	40	Total.	19	24	16	6	7	1	1	1	3	2	—	—	—	—	—
		Males.	—	14	12	4	5	1	1	1	2	—	—	—	—	—	—
		Fem.	19	10	4	2	2	—	—	—	1	2	—	—	—	—	—
Lapeer	241	Total.	72	212	109	39	10	14	7	5	6	4	2	—	—	—	—
		Males.	3	107	65	28	8	13	5	2	4	3	2	—	—	—	—
		Fem.	69	105	44	11	2	1	2	3	2	1	—	—	—	—	—
Leelanau	80	Total.	31	58	38	17	7	3	2	1	1	2	—	—	—	—	—
		Males.	1	30	28	11	5	2	1	1	—	—	—	—	—	—	—
		Fem.	30	28	10	6	2	1	1	—	1	1	—	—	—	—	—
Lenawee	460	Total.	110	377	211	81	49	22	23	20	9	12	4	—	—	1	1
		Males.	10	179	134	46	33	7	15	17	4	11	3	—	—	1	—
		Fem.	100	198	77	35	16	15	8	3	5	1	1	—	—	—	1
Livingston	179	Total.	42	158	87	24	20	7	10	5	1	—	—	1	1	1	1
		Males.	3	75	55	16	13	5	6	2	1	—	—	1	1	1	—
		Fem.	39	83	32	8	7	2	4	3	—	—	—	—	—	—	1
Luce	19	Total.	3	13	18	4	—	—	—	—	—	—	—	—	—	—	—
		Males.	—	4	14	1	—	—	—	—	—	—	—	—	—	—	—
		Fem.	3	9	4	3	—	—	—	—	—	—	—	—	—	—	—
Mackinac	51	Total.	22	33	19	11	8	4	1	2	2	—	—	—	—	—	—
		Males.	—	15	17	8	5	3	—	2	1	—	—	—	—	—	—
		Fem.	22	18	2	3	3	1	1	—	1	—	—	—	—	—	—
Macomb	269	Total.	74	224	147	42	21	8	12	2	1	3	2	1	1	—	—
		Males.	9	99	101	28	14	4	8	1	—	2	1	1	1	—	—
		Fem.	65	125	46	14	7	4	4	1	1	1	—	—	—	—	—
Manistee	192	Total.	71	151	68	41	25	16	5	2	—	4	1	—	—	—	—
		Males.	3	71	51	27	21	10	4	2	—	2	1	—	—	—	—
		Fem.	68	80	17	14	4	6	1	—	—	2	—	—	—	—	—
Marquette	284	Total.	81	209	175	55	25	10	7	5	1	—	—	—	—	—	—
		Males.	2	83	130	37	20	3	5	3	1	—	—	—	—	—	—
		Fem.	79	126	45	18	5	7	2	2	—	—	—	—	—	—	—
Mason	130	Total.	42	118	45	22	13	5	4	4	2	1	2	—	—	2	—
		Males.	3	57	35	16	7	4	2	1	1	—	—	—	—	2	—
		Fem.	39	61	10	6	6	1	2	3	1	1	—	—	—	—	—

TABLE II.—CONTINUED.—*Persons married, by ages, counties and sex, 1898.*

Counties.	Total marriages, 1898.	Sex.	Number of persons married, by periods of age, 1898.															
			Under 20 years.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.	
Mecosta.....	182	Total.....	63	146	80	29	16	5	8	7	5	2	3					
		Males.....	75	58	21	8	4	6	4	2	2	2	2					
		Fem.....	63	71	22	8	8	1	2	3	3	1	1					
Menominee....	130	Total.....	52	90	60	22	14	6	4	4	1	3	3		1			
		Males.....	2	39	45	21	11	2	2	3	1	3	1					
		Fem.....	50	51	15	1	3	4	2	1			2		1			
Midland.....	121	Total.....	54	100	41	17	11	7	1	1	4	4	1	1				
		Males.....	2	60	25	16	8	3		1	3	1	1	1				
		Fem.....	52	40	16	1	3	4	1		1	3						
Missaukee.....	66	Total.....	34	47	23	7	11	3	4	2	1							
		Males.....	1	32	14	4	8	3	1	2	1							
		Fem.....	33	15	9	3	3		3									
Monroe.....	304	Total.....	91	243	167	49	25	14	12	4	2	1						
		Males.....	7	118	101	35	21	10	7	3	1	1						
		Fem.....	84	125	66	14	4	4	5	1	1							
Montcalm.....	302	Total.....	126	219	106	53	38	20	10	8	10	9	2	2	1			
		Males.....	15	113	75	38	23	13	2	7	6	5	2	2	1			
		Fem.....	111	106	31	15	15	7	8	1	4	4						
Montmorency..	20	Total.....	5	21	10	3	1											
		Males.....	8	8	3	1												
		Fem.....	5	13	2													
Muskegon.....	262	Total.....	64	223	108	45	34	10	11	10	9	8	2					
		Males.....	5	95	80	27	21	8	5	7	5	7	2					
		Fem.....	59	128	28	18	13	2	6	3	4	1						
Newaygo.....	155	Total.....	65	131	63	23	10	5	5	4	2	1	1					
		Males.....	6	72	44	14	6	2	4	4	2	1						
		Fem.....	59	59	19	9	4	3	1			1						
Oakland.....	318	Total.....	81	259	142	51	33	21	15	14	7	6	2	1	2	1	1	
		Males.....	4	125	91	33	19	16	9	7	6	4	1	1	1	1	1	
		Fem.....	77	134	51	18	14	5	6	7	1	2	1		1	1	1	
Oceana.....	157	Total.....	57	138	57	24	14	9	4	4	2	3	2					
		Males.....	2	68	44	17	9	6	3	3	2	1	2					
		Fem.....	55	70	13	7	5	3	1	1		2						
Ogemaw.....	65	Total.....	34	43	34	8	4	2	3		2							
		Males.....	26	26	3	3	4	2	2		2							
		Fem.....	34	17	8	5			1									
Ontonagon....	27	Total.....	9	20	15	3	6	1										
		Males.....	8	10	2	6	1											
		Fem.....	9	12	5	1												
Osceola.....	141	Total.....	55	107	65	25	9	9	2	3	2	3	2					
		Males.....	6	53	41	20	6	7	1	1	1	3	2					
		Fem.....	49	54	24	5	3	2	1	2	1							
Oscoda.....	7	Total.....	4	4		1	2		2		1							
		Males.....	2			1	2		2									
		Fem.....	4	2							1							
Otsego.....	53	Total.....	19	33	29	12	7	3	2	1								
		Males.....	12	20	11	7	2	1										
		Fem.....	19	21	9	1		1	1	1								
Ottawa.....	330	Total.....	95	299	158	38	23	17	10	8	2	6	2		2			
		Males.....	8	137	115	25	17	10	6	4	1	4	1		2			
		Fem.....	87	162	43	13	6	7	4	4	1	2	1					
Presque Isle...	61	Total.....	34	41	25	10	2	4	3	1	1	1						
		Males.....	27	18	8	2	3	1	1			1						
		Fem.....	34	14	7	2		1	2		1							

MARRIAGES

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TABLE II.—CONCLUDED.—Persons married, by ages, counties and sex, 1898.

Counties.	Total marriages, 1898.	Sex.	Number of persons married, by periods of age, 1898.															
			Under 20 years.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 + Unk.		
Roscommon.....	16	{ Total. Males. Fem....	8 — 8	8 6 2	7 5 2	4 2 2	— — —	1 1 1	3 2 1	— — —	— — —	— — —	— — —	— — —	— — —	— — —	1	
Saginaw.....	656	{ Total. Males. Fem....	185 6 179	508 236 272	294 193 101	136 93 23	80 57 23	27 20 9	18 15 9	24 12 8	20 8 2	10 4 2	6 2 2	2 2 —	1 1 —	1 1 —	1	
Sanilac.....	295	{ Total. Males. Fem....	85 2 83	242 109 133	143 101 42	63 43 20	18 15 3	11 7 4	10 5 5	8 6 2	3 2 1	5 3 2	2 2 —	— — —	— — —	— — —	—	
Schoolcraft....	58	{ Total. Males. Fem....	14 1 13	48 17 31	33 24 9	10 9 1	6 4 2	4 2 2	1 1 —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	—	
Shiawassee.....	335	{ Total. Males. Fem....	108 8 100	264 129 135	142 100 42	61 36 25	38 24 14	25 18 7	14 7 3	5 2 3	5 1 —	2 1 1	4 4 —	2 1 1	— — —	— — —	—	
St. Clair.....	463	{ Total. Males. Fem....	117 10 107	354 160 194	220 142 78	100 63 37	50 33 17	27 17 10	18 14 4	14 8 6	13 6 7	7 5 2	4 3 1	1 1 —	1 1 —	— — —	—	
St. Joseph.....	213	{ Total. Males. Fem....	76 6 70	160 89 71	91 54 37	41 30 11	22 13 9	12 7 5	5 3 2	10 5 5	3 2 1	2 1 1	1 2 —	2 — —	— — —	— — —	1	
Tuscola.....	290	{ Total. Males. Fem....	99 6 93	226 118 108	109 74 35	51 32 19	30 20 9	20 11 4	9 5 5	13 8 5	10 5 2	7 5 —	6 6 —	— — —	— — —	— — —	—	
Van Buren.....	311	{ Total. Males. Fem....	112 10 102	227 124 103	111 72 39	51 29 22	34 22 12	17 10 7	21 13 8	17 11 6	13 4 9	8 7 1	5 3 2	4 4 —	2 2 —	— — —	—	
Washtenaw....	358	{ Total. Males. Fem....	63 2 61	207 112 155	209 117 92	93 70 23	35 23 12	13 8 5	12 8 4	8 6 2	5 4 1	4 3 1	2 2 —	1 1 —	— — —	— — —	2	
Wayne.....	2,444	{ Total. Males. Fem....	434 9 425	2,048 850 1,198	1,380 890 490	470 325 145	256 162 94	122 85 37	82 56 26	41 28 13	20 15 5	17 12 5	6 5 —	3 — 1	3 — —	2 2 —	7	
Wexford.....	169	{ Total. Males. Fem....	67 6 61	123 59 64	70 50 20	29 19 10	19 17 2	4 2 2	13 9 4	5 3 2	— — —	2 — 2	3 1 2	3 — —	— — —	— — —	—	

TABLE III.—Marriages and persons married in Michigan, by nativity and counties, during the year 1898.

State and counties.	Total marriages, 1898.	(a) Marriages, by nativity, 1898.										(b) Persons married, by nativity, 1898.					
		Both native born.	Both foreign born.	Foreign male, native female.	Foreign female, native male.	Female unk.		Male unk.		Native born.	Foreign born.	Unk.					
						Native.	Foreign.	Native.	Foreign.			Both unk.	Males.	Females.			
															Male.	Fe- male.	
STATE.....	20,138	12,935	2,686	2,463	1,608	344	87	8	5	2	14,887	15,406	5,236	4,299	15	433	
Alcona.....	37	12	7	9	9	—	—	—	—	—	21	21	16	16	—	—	
Alger.....	66	23	14	17	8	4	—	—	—	—	35	40	31	22	—	4	
Allegan.....	354	300	14	25	13	2	—	—	—	—	315	325	39	27	—	2	
Alpena.....	141	44	24	37	25	7	4	—	—	—	76	81	65	49	—	11	
Antrim.....	131	87	10	14	5	10	5	—	—	—	102	101	29	15	—	15	
Arenac.....	82	45	12	15	8	1	1	—	—	—	54	60	28	20	—	2	
Baraga.....	18	6	3	6	3	—	—	—	—	—	9	12	9	6	—	—	
Barry.....	228	205	2	11	5	5	—	—	—	—	215	216	13	7	—	5	
Bay.....	495	213	97	97	50	24	13	—	1	—	287	310	207	148	1	37	
Benzie.....	88	60	8	9	9	1	1	—	—	—	70	69	18	17	—	2	
Berrien.....	444	349	29	23	18	23	1	1	—	—	390	373	53	47	1	24	
Branch.....	255	232	2	11	—	9	1	—	—	—	241	244	13	2	1	9	
Calhoun.....	432	376	6	32	14	3	1	—	—	—	393	408	39	20	—	4	
Cass.....	220	204	1	1	6	5	1	—	2	—	215	205	3	9	2	6	
Charlevoix.....	102	75	5	12	5	5	—	—	—	—	85	87	17	10	—	5	
Cheboygan.....	138	70	14	24	26	3	1	—	—	—	99	94	39	40	—	4	
Chippewa.....	143	22	80	21	18	—	2	—	—	—	40	43	103	98	—	2	
Clare.....	67	41	6	9	10	1	—	—	—	—	52	50	15	16	—	1	
Clinton.....	252	221	2	19	9	1	—	—	—	—	231	240	21	11	—	1	
Crawford.....	27	18	2	6	1	—	—	—	—	—	19	24	8	3	—	—	
Delta.....	406	60	59	35	12	—	—	—	—	—	72	95	94	71	—	—	
Dickinson.....	118	16	81	11	7	1	1	1	—	—	24	28	93	88	1	2	
Eaton.....	322	306	3	9	4	—	—	—	—	—	310	315	12	7	—	—	
Emmet.....	148	106	9	19	14	—	—	—	—	—	120	125	28	23	—	—	
Genesee.....	391	318	10	37	26	—	—	—	—	—	344	355	47	36	—	—	
Gladwin.....	39	21	3	7	8	—	—	—	—	—	29	28	10	11	—	—	
Gogebie.....	150	13	117	13	6	1	—	—	—	—	20	26	130	123	—	1	
Grand Traverse.....	206	155	13	18	13	7	—	—	—	—	175	173	31	26	—	7	
Gratiot.....	319	263	2	30	16	7	1	—	—	—	286	293	33	18	—	8	
Hillsdale.....	287	241	1	5	3	37	—	—	—	—	281	246	6	4	—	37	
Houghton.....	509	139	239	89	40	1	1	—	—	—	180	228	329	279	—	2	
Huron.....	248	107	54	55	28	1	3	—	—	—	136	162	112	82	—	4	
Ingham.....	407	336	11	25	22	10	3	—	—	—	368	361	39	33	—	13	
Ionia.....	297	241	3	29	12	9	3	—	—	—	262	270	35	15	—	12	
Iosco.....	78	35	15	11	10	1	1	—	—	—	46	46	27	25	—	2	
Iron.....	41	—	28	10	3	—	—	—	—	—	3	10	38	31	—	—	
Isabella.....	218	163	15	24	16	—	—	—	—	—	179	187	39	31	—	—	
Jackson.....	496	402	16	36	32	8	2	—	—	—	442	438	54	48	—	10	
Kalamazoo.....	433	346	34	34	19	—	—	—	—	—	365	380	68	53	—	—	
Kalkaska.....	63	50	1	6	6	—	—	—	—	—	56	56	7	7	—	—	
Kent.....	1,223	763	178	159	114	7	2	—	—	—	884	922	339	292	—	9	
Keweenaw.....	10	4	3	2	1	—	—	—	—	—	5	6	5	4	—	—	
Lake.....	40	25	4	7	4	—	—	—	—	—	29	32	11	8	—	—	
Lapeer.....	241	182	11	34	14	—	—	—	—	—	196	216	45	25	—	—	
Leelanau.....	80	51	6	16	7	—	—	—	—	—	58	67	22	13	—	—	

MARRIAGES

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TABLE III.—CONCLUDED.—*Marriages by nativity and counties, 1898.*

Counties.	Total marriages, 1898.	(a) Marriages, by nativity, 1898.										(b) Persons married, by nativity, 1898.					
		Both native born.	Both foreign born.	Foreign male, native female.	Foreign female, native male.	Female unk.		Male unk.		Native born.		Foreign born.		Unk.			
						Male.		Fe-male.		Males.	Females.	Males.	Females.	Males.	Females.		
						Native.	Foreign.	Native.	Foreign.								
																Both unk.	
Lenawee.....	460	418	10	20	9	3				430	438	30	19		3		
Livingston.....	179	149	4	13	9	2	1	1		160	163	18	13	1	3		
Luce.....	19	2	11	1	4					6	3	13	15		1		
Mackinac.....	51	20	5	10	13		3			33	30	18	18		3		
Macomb.....	299	188	20	33	25	3				216	221	53	45		3		
Manistee.....	192	88	47	31	26					114	119	78	73				
Marquette.....	284	76	126	51	29	2				107	127	177	155		2		
Mason.....	130	77	25	17	10	1				88	94	42	35		1		
Mecosta.....	182	139	15	20	8					147	159	35	23				
Menominee.....	130	42	50	19	11	4	4			57	61	73	61		8		
Midland.....	121	79	10	13	19					98	92	23	29				
Missaukee.....	66	38	8	13	7					45	51	21	15				
Monroe.....	304	262	10	15	13	3	1			278	277	26	23		4		
Montcalm.....	302	328	12	34	20	7	1			255	262	47	32		8		
Montmorency.....	20	12	1	3	2	1	1			15	15	5	3		2		
Muskegon.....	262	158	37	45	22					180	203	82	59				
Newaygo.....	155	125	6	14	7	2	1			134	139	21	13		3		
Oakland.....	318	232	12	27	23	21		2	1	276	261	39	36	3	21		
Oceana.....	157	110	10	17	11	8	1			129	127	28	21		9		
Ogemaw.....	65	38	5	9	7	4	2			49	47	16	12		6		
Ontonagon.....	27	17	5	5						17	22	10	5				
Osceola.....	141	81	12	22	18	6	1	1		105	104	35	30	1	7		
Oscoda.....	7	3	1	2	1					4	5	3	2				
Otsego.....	53	29	4	11	6	3				38	40	15	10		3		
Ottawa.....	330	212	33	48	33	4				249	260	81	66		4		
Presque Isle.....	61	26	9	18	8					34	44	27	17				
Roscommon.....	16	8		3	4	1				13	11	3	4		1		
Saginaw.....	656	388	81	100	73	8	5		1	469	488	186	155	1	13		
Sanilac.....	295	116	58	87	33		1			149	203	146	91		1		
Schoolcraft.....	58	10	22	17	8		1			18	27	40	30		1		
Shiawassee.....	335	273	8	28	16	8	2			297	301	38	24		10		
St. Clair.....	463	255	78	68	50	7	5			312	323	151	128		12		
St. Joseph.....	213	180	3	11	3	14	1		1	197	191	15	6	1	16		
Tuscola.....	290	170	19	48	37	11	4		1	218	218	71	56	1	16		
Van Buren.....	311	282	5	12	11			1		293	295	17	16	1			
Washtenaw.....	358	255	24	35	31	12	1			298	290	60	55		13		
Wayne.....	2,444	1,093	626	410	307	8				1,408	1,503	1,036	933		8		
Wexford.....	169	110	20	14	15	7	3			132	134	37	35		10		

TABLE IV.—Marriages in Michigan, by ages of males and females married, during the year 1898.

Ages of males married, 1898.	Ages of females married, 1898.															Total males.	Per cent of males at each age.
	Under 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	50 to 54.	55 to 59.	60 to 64.	65 to 69.	70 to 74.	75 to 79.	80 +	Unk.		
Under 20.....	277	70	1	2	---	---	---	---	---	---	---	---	---	---	---	350	1.7
20 to 24.....	3,393	3,911	316	39	6	4	---	---	---	---	---	---	---	---	7	7,676	38.1
25 to 29.....	1,467	3,040	1,428	178	45	6	3	3	---	---	---	---	---	---	1	6,171	30.6
30 to 34.....	343	945	699	382	90	19	2	2	---	---	---	---	---	---	2	2,484	12.3
35 to 39.....	110	319	355	287	174	50	21	2	1	---	---	---	---	---	3	1,322	6.6
40 to 44.....	25	87	125	137	150	99	31	8	2	1	---	---	---	---	---	665	3.3
45 to 49.....	14	38	74	67	105	90	89	16	4	2	---	---	---	---	---	499	2.5
50 to 54.....	5	21	19	27	65	71	56	57	14	7	---	---	---	---	1	343	1.7
55 to 59.....	2	5	9	13	30	21	43	40	42	14	---	1	1	---	1	222	1.1
60 to 64.....	3	4	7	9	16	17	32	38	25	23	9	---	---	---	---	183	0.9
65 to 69.....	1	---	3	2	8	8	20	21	28	19	14	2	---	---	---	126	0.6
70 to 74.....	---	2	1	1	1	2	4	8	7	10	13	2	---	---	---	51	0.3
75 to 79.....	---	1	---	1	1	1	3	3	2	9	7	1	3	---	---	32	0.2
80 and over....	1	---	---	---	---	---	1	1	1	3	2	1	---	1	---	11	0.1
Unknown.....	---	1	---	---	---	---	---	---	---	---	---	---	---	---	2	3	---
Total females.	5,641	8,444	3,037	1145	691	388	305	199	126	88	45	7	4	1	17	20,138	-----
Per cent.....	28.0	41.9	15.1	5.7	3.4	1.9	1.5	1.0	0.6	0.4	0.3	---	---	---	---	-----	100.0

TABLE V.—Probate marriages in Michigan, by ages of males and females married, during the year 1898.

Ages of males married by Judges of Probate, 1898.		Ages of females married by Judges of Probate, 1898.											Total males.	Per cent of males at each age.			
		Ages under 20 years.						Un- der 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.			40 to 44.	45 to 49.	
		14.	15.	16.	17.	18.	19.										
Ages under 20 years		17.....	2	2		2	1	1	8							8	16.0
		18.....	1		1	1			3							3	6.0
"		19.....		2		2	2		6							6	12.0
Under 20.....			3	4	1	5	3	1	17							17	34.0
20 to 24.....			4	9	1	2	2	1	19	3						22	44.0
25 to 29.....					1				1	2	1					4	8.0
30 to 34.....							1		1	1						2	4.0
35 to 39.....										1	1					2	4.0
40 to 44.....														1		1	2.0
45 to 49.....																	
50 to 54.....														1		1	2.0
55 to 59.....																	
60 to 64.....																	
65 to 69.....														1		1	2.0
Total females.....			7	13	3	7	6	2	38	7	2			3		50	
Per cent.....			14.0	26.0	6.0	14.0	12.0	4.0	76.0	14.0	4.0			6.0		100.0	

NOTE.—Figures in bold face indicate marriages at illegal ages, under the general laws of the State, for one or both parties. The 50 marriages performed by Judges of Probate in Michigan during the year 1898 were distributed by months as follows:—January, 5; February, 5; March, 6; April, 8; May, 2; June, 2; July, 5; August, 5; September, 1; October, 3; November, 4; December, 4. All were white with the exception of one couple. By nativity, there were 40 couples both native born; 7 couples with foreign male and native female; 2 couples with native male and foreign female; 1 couple male unknown, female native. These marriages were returned from 30 counties, the largest number reported from a county being 4 (two cases). They are not included in the preceding tables of marriages.

TABLES
RELATING TO
DIVORCES
AND
CAUSES OF DIVORCE
IN
MICHIGAN
DURING THE
YEAR 1898

PRIMARY TABLES RELATING TO DIVORCES AND CAUSES OF DIVORCE IN MICHIGAN DURING THE YEAR 1898.

TABLE I.—*Divorce business in Michigan, by counties, during the year 1898, showing, according to the "Summaries" filed by the county clerks, the number of bills for divorce pending at the beginning and end of the year, number filed during the year, number withdrawn or otherwise disposed of, number contested, and the number of divorces granted and refused.*

TABLE II.—*Divorces in Michigan, by counties and sex of complainant, during the year 1898, showing place of marriage, number of children in family, and duration of marriage before divorce.*

TABLE III.—*Causes of divorce in Michigan, by sex of complainant, during the year 1898, showing place of marriage, number of children in family, and duration of marriage before divorce.*

NOTE.—*Secondary tables, containing divorce rates, etc., will be found on preceding pages of this Report, together with the descriptive text.*

TABLE I.—Divorce business in Michigan, by counties, during the year 1898, showing, according to the "Summaries" * filed by the county clerks, the number of bills for divorce pending at the beginning and end of the year, number filed during the year, number withdrawn or otherwise disposed of, number contested, and the number of divorces granted and refused.

State and counties.	Number of bills pending on January 1, 1898.	Number of bills filed during 1898.	Number of divorces granted, 1898.	Number of divorces refused, 1898.	Number of cases withdrawn, etc., 1898.	Number of bills pending on December 31, 1898.	Total number of cases, 1898.	Number of cases contested, 1898.	Number of divorces granted but not recorded on account of non-payment of fees
STATE.....	2,475	2,898	1,901	21	128	3,323	5,373	432	50
Alcona.....	3	4	4		1	2	7	2	
Alger.....	5	9				14	14		
Allegan.....	33	69	46	1	5	50	102		
Alpena.....	15	13	8		1	19	28	3	
Antrim.....	11	18	11		1	17	29	3	
Arenac.....	7	5	3	3	3	3	12	1	
Baraga.....		1				1	1		
Barry.....	23	30	25	1	1	26	53	9	3
Bay.....	71	40	19		1	91	111	13	
Benzle.....	15	10	14	1		10	25	1	7
Berrien.....	28	68	36		5	55	96	18	
Branch.....	23	41	25		1	38	64	1	1
Calhoun.....	85	84	70		3	96	169	10	
Cass.....	19	44	15		3	45	63		
Charlevoix.....	21	17	13			25	38		2
Cheboygan.....	4	17	9			12	21		2
Chippewa.....	17	13	10	2	2	16	30	3	
Clare.....	9	13	11	1		10	22		
Clinton.....	59	37	31	1	2	62	96	8	
Crawford.....	1		1				1		
Delta.....	6	18	14		4	6	24		
Dickinson.....	5	3	1		1	6	8		
Eaton.....	29	70	40		1	58	99		
Emmet.....	8	21	10		1	18	29		
Genesee.....	26	58	38	1	1	44	84	4	
Gladwin.....	3	4	2			5	7		
Gogebic.....	35	4	6			33	39	2	
Gd. Traverse.....	23	48	33			38	71	1	
Gratiot.....	32	63	35	1	4	55	95	2	5
Hillsdale.....	17	40	24		1	32	57		1
Houghton.....	13	25	18			20	38	1	
Huron.....		9	3			6	9		
Ingham.....	103	73	69		2	105	176	2	3
Ionia.....	52	57	25		1	83	109		
Iosco.....		4	1			3	4		
Iron.....	2	1	2			1	3		
Isabella.....	11	20	12		1	18	31	4	
Jackson.....	26	98	66	1	2	55	124	5	
Kalamazoo.....	34	75	58		1	50	109	8	
Kalkaska.....	14	10	11		1	12	24		
Kent { Sup. Ct. 240 20 21 1 238 260 2	114 234 160 6 182 348 72								
Keweenaw.....									
Lake.....	11	7	11	1		6	18	2	
Lapeer.....	12	31	12		1	30	43	11	
Leelanau.....	12	4	12		2	2	16		

* The total number of divorces granted during the year 1898, according to the "Summaries" returned by county clerks, was 1,901, or 93 more than the number compiled from the schedules also returned by the county clerks and presented in Tables II and III. Some of these additional divorces may be those granted and not recorded on account of non-payment of fees, but the discrepancy is also due in part to carelessness of the county clerks in filling out their returns. After tedious correspondence, it proved impossible to obtain satisfactory statements in some cases, and three counties, Crawford, Huron and Ogemaw, failed to return any Summaries after repeated notification.

TABLE I.—CONCLUDED.—*Divorce business in Michigan, by counties, 1898.*

Counties.	Number of bills pending on January 1, 1898.	Number of bills filed during 1898.	Number of divorces granted, 1898.	Number of divorces refused, 1898.	Number of cases with- drawn, etc., 1898.	Number of bills pending on December 31, 1898.	Total number of cases, 1898.	Number of cases contested, 1898.	Number of divorces granted but not recorded on account of non-payment of fees.
Lenawee.....	74	55	41	-----	9	79	129	8	1
Livingston.....	15	27	19	-----	3	20	42	12	-----
Luce.....	5	4	1	-----	-----	8	9	-----	-----
Mackinac.....	4	8	5	-----	-----	7	12	-----	-----
Macomb.....	22	34	22	-----	-----	34	56	12	-----
Manistee.....	19	11	7	1	-----	22	30	-----	-----
Marquette.....	13	15	9	-----	-----	19	28	-----	-----
Mason.....	3	13	3	-----	3	10	16	-----	-----
Mecosta.....	19	25	12	1	2	29	44	2	1
Menominee.....	7	16	9	-----	-----	14	23	-----	-----
Midland.....	11	19	10	-----	-----	20	30	3	-----
Missaukee.....	5	13	9	-----	-----	9	18	-----	-----
Monroe.....	16	27	13	-----	1	29	43	4	-----
Montcalm.....	34	36	23	-----	3	44	70	-----	-----
Montmorency.....	3	3	3	-----	1	2	6	-----	-----
Muskegon.....	80	38	34	-----	1	83	118	4	3
Newaygo.....	31	19	16	-----	1	33	50	-----	-----
Oakland.....	56	77	42	-----	2	89	133	-----	7
Oceana.....	23	24	18	-----	-----	29	47	-----	-----
Ogemaw.....	-----	8	2	-----	-----	6	8	-----	-----
Ontonagon.....	-----	2	2	-----	-----	-----	2	-----	-----
Osceola.....	8	13	10	-----	-----	11	21	3	-----
Oscoda.....	-----	1	1	-----	-----	-----	1	-----	-----
Otsego.....	5	9	5	-----	-----	9	14	2	-----
Ottawa.....	12	13	5	1	-----	22	28	-----	1
Presque Isle.....	2	4	-----	-----	-----	6	6	6	-----
Roscommon.....	-----	-----	-----	-----	-----	-----	-----	-----	-----
Saginaw.....	29	85	57	1	3	53	114	11	-----
Sanilac.....	6	21	6	-----	1	20	27	6	-----
Schoolcraft.....	11	7	4	-----	-----	14	18	-----	2
Shiawassee.....	77	28	48	-----	3	54	105	11	7
St. Clair.....	137	60	39	-----	1	157	197	-----	-----
St. Joseph.....	17	30	18	-----	4	25	47	4	-----
Tuscola.....	13	39	22	-----	1	29	52	9	-----
Van Buren.....	28	55	39	-----	-----	44	83	11	3
Washtenaw.....	20	53	30	-----	2	41	73	19	-----
Wayne.....	255	439	252	3	26	413	694	113	-----
Wexford.....	138	34	30	-----	1	141	172	4	1

NOTE ON MANNER OF COLLECTING RETURNS OF DIVORCES IN MICHIGAN.

The statistics relative to the divorce business of the different courts in Michigan authorized to grant divorces are obtained on two kinds of blanks: (1) THE SUMMARY, or statistical statement, made out by the clerk; and (2) THE SCHEDULE, or detailed transcript of each divorce acted upon by his court during the year. Following are specimens of these forms, together with the essential part of the instructions issued as a guide to the satisfactory return of divorces:

This Return must be made on or before the FIRST DAY OF FEBRUARY, 1899.

THE SUMMARY OF RETURNS RELATIVE TO DIVORCES.

[COUNTY OF....., STATE OF MICHIGAN, 1898.

To the Honorable Secretary of State, Lansing, Mich.:

Sir—As required by Public Act No. 9 of 1897, I herewith submit returns relative to divorces coming before this Court during the year 1898:

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INSTRUCTIONS—HOW TO MAKE THE RETURNS OF DIVORCES.

drawn, etc., added to the number of cases pending at the close of the year.

5. What are "Cases Pending"?—We mean by this term only "live" divorce cases now on the docket of the court for action. Final decrees have not been entered in some cases of years standing, and which have been decided long ago. Clerks can usually determine, with approximate accuracy, what cases are actually pending at the present time, and from this basis the number pending in future returns can be derived by adding the cases begun and subtracting the cases disposed of.

TABLE II.—Divorces in Michigan, by counties and sex of complainant, during duration of mar-

State and counties.	Sex of complainants.	Complainants in divorces granted, 1898.	Place of marriage.						Number of children.					
			Michigan.	Ohio, Indiana, Wisconsin.	Other States.	Canada.	Other foreign countries.	Unk.	0	1	2	3	4	5
STATE.....	Total..	1,808	1,468	78	115	111	21	15	890	412	239	115	66	34
	Males..	472	364	25	34	35	9	5	288	77	48	24	21	3
	Fem...	1,336	1,104	53	81	76	12	10	602	335	191	91	45	31
Alcona.....	Total..	4	4						2	1			1	
	Males..	1	1						1					
	Fem...	3	3						1	1			1	
Alger.....	Total..													
	Males..													
	Fem...													
Allegan.....	Total..	45	41	1	2	1			25	12	5	1		1
	Males..	12	10	1	1				10	1	1			
	Fem...	33	31		1	1			15	11	4	1		1
Alpena.....	Total..	8	6			2			2	3	1		1	
	Males..	2	1			1			1				1	
	Fem...	6	5			1			1	3	1			
Antrim.....	Total..	5	4					1	4	1				
	Males..	2	2						2					
	Fem...	3	2					1	2	1				
Arenac.....	Total..	1	1						1					
	Males..	1	1						1					
	Fem...													
Baraga.....	Total..													
	Males..													
	Fem...													
Barry.....	Total..	25	22	1	2				11	6	4	2	1	
	Males..	8	7	1					6	1		1		
	Fem...	17	15		2				5	5	4	1	1	
Bay.....	Total..	17	16					1	6	8		2		1
	Males..	3	3						2	1				
	Fem...	14	13					1	4	7		2		1
Benzie.....	Total..	12	9	1	1	1			2	1	5	3	1	
	Males..	4	3		1				1		1	2		
	Fem...	8	6	1		1			1	1	4	1	1	
Berrien.....	Total..	36	25	3	7		1		18	5	3	4	3	3
	Males..	10	6	2	1		1		6	2	1	1		
	Fem...	26	19	1	6				12	3	2	3	3	3
Branch.....	Total..	25	21	1	3				12	5	6			
	Males..	5	4		1				4		1			
	Fem...	20	17	1	2				8	5	5			
Calhoun.....	Total..	70	62	2	4	1		1	39	15	7	6		1
	Males..	20	16		2	1		1	12	3	2	2		
	Fem...	50	46	2	2				27	12	5	4		1
Cass.....	Total..	23	16	3	3	1			12	6	4	1		
	Males..	4	2	1		1			4					
	Fem...	19	14	2	3				8	6	4	1		
Charlevoix.....	Total..	12	8	3	1				5	2	2	1	2	
	Males..	5	3	2					2				2	
	Fem...	7	5	1	1				3	2	1	1		
Cheboygan.....	Total..	14	11			2		1	5	2	2	2	1	1
	Males..	1				1			1					
	Fem...	13	11			1		1	5	2	1	2	1	1
Chippewa.....	Total..	10	5	1	1	3			4	1	1	2	2	
	Males..	1	1						1					
	Fem...	9	4	1	1	3			3	1	1	2	2	

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[illegible]

TABLE II.—CONTINUED.—*Divorces in Michigan, by counties and sex of com-*

Counties.	Sex of complainants.	Complainants in divorces granted, 1898.	Place of marriage.						Number of children.					
			Michigan.	Ohio, Indiana, Wisconsin.	Other states.	Canada.	Other foreign countries.	Unk.	0.	1.	2.	3.	4.	5.
Clare.....	Total..	10	8	1		1			3	1	3	2		
	Males..	3	1	1		1			1			2		
	Fem..	7	7						2	1	3			
Clinton.....	Total..	28	25		2	1			15	8	2	1		1
	Males..	9	8		1				5	3	1			
	Fem..	19	17		1	1			10	5	1	1		1
Crawford.....	Total..	1	1						1					
	Males..													
	Fem..	1	1						1					
Delta.....	Total..	14	8	1		5			7	4	1	1		1
	Males..	3	2			1			2		1			
	Fem..	11	6	1		4			5	4		1		1
Dickinson.....	Total..	1	1										1	
	Males..	1	1										1	
	Fem..													
Eaton.....	Total..	23	22	1					8	7	2	3		1
	Males..	3	3						2		1			
	Fem..	20	19	1					6	7	1	3		1
Emmet.....	Total..	10	7	1	1	1			4	3	1	1		
	Males..	3	2	1					1	1		1		
	Fem..	7	5		1	1			3	2	1			
Genesee.....	Total..	39	36	1	2				27	5	7			
	Males..	12	12						11	1				
	Fem..	27	24	1	2				16	4	7			
Gladwin.....	Total..	2	2						1		1			
	Males..								1		1			
	Fem..	2	2											
Gogebic.....	Total..	6	4	1			1		2	1	1	1		1
	Males..	2	1	1			1		2					
	Fem..	4	4							1	1	1		1
Grand Traverse.....	Total..	33	28	2	1	1		1	11	12	2	6	2	
	Males..	9	8		1				3	4		2		
	Fem..	24	20	2		1		1	8	8	2	4	2	
Gratiot.....	Total..	33	33						17	7	4	1	1	
	Males..	6	6						4	1	1			
	Fem..	27	27						13	6	3	1	1	
Hillsdale.....	Total..	24	21	2	1				15	3	4	1		1
	Males..	5	2	2	1				3	1				1
	Fem..	19	19						12	2	4	1		
Houghton.....	Total..	9	7				2		2	2	1	1	1	1
	Males..	1					1		1				1	
	Fem..	8	7				1		2	2	1	1		1
Huron.....	Total..	3	3						1	1	1			
	Males..	2	2						1		1			
	Fem..	1	1							1				
Ingham.....	Total..	69	55	3	9	1		1	35	17	10	4	1	2
	Males..	16	15			1			9	3	2	1	1	
	Fem..	53	40	3	9			1	26	14	8	3		2
Ionia.....	Total..	15	14		1				5	3	4	1		1
	Males..	6	6						2		2	1		
	Fem..	9	8		1				3	3	2			1
Iosco.....	Total..	1				1				1				
	Males..	1				1				1				
	Fem..													
Iron.....	Total..	2	2						1	1				
	Males..													
	Fem..	2	2						1	1				

DIVORCES

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plainant, number of children in family and duration of marriage before divorce.

Children in family.						Duration of marriage before divorce.																
6.	7.	8.	9.	10.	Unk.	Under 1 year.	1.	2.	3.	4.	Under 5 years.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	Unk.	
1												4	2	2		2						
1												1	1			1						
												3		2								
1							1	2	4	2	9	9	2	3	3	1					1	
1							1	2	1	2	3	3	1	1	2	1					1	
											6	6			3							
								1			1											
								1			1											
						1		1	1	1	4	4	2	3	1							
						1		1	1	1	4	2	2	2	1							
														1								
														1								
1				1				2	3	1	6	7	3	1	4	2						
1				1				2	2	1	1	1	3	1	3	2						
1									2		2	5	1	1		1						
1									2		2	3	1	1		1						
						2	2	4	8		16	8	7	3	4	1						
						2	2	2	5		5	3	2	1	1	1						
											11	5	5	2	3	1						
												2										
												2										
								1			1	5										
								1			1	1										
												4										
						1			3	3	7	9	12	3	2							
						1			2	1	3	2	3	1								
									1	2	4	7	9	2	2							
3							3	1	4	4	12	8	6	3	3	1						
3							2	1		2	5	1		1	1							
							1		4	2	7	8	6	3	2	1						
						1	2	1	1		5	12	4	2	1							
						1	2	1			1	2	1	1								
											4	10	3	2								
			1				1		1		2	1	4	1	1							
			1				1		1		2	1	4	1	1							
												2										
												2										
																	1					
																	1					
						1	4	4	9	2	20	20	14	7	1	7						
						1	1	1	4	1	7	6	1	1								
						1	3	3	5	1	13	14	13	6	1	6						
					1				1		1	5	4	3	2							
					1				1		1	2	2	1	2							
														1								
														1								
								1			1		1									
								1			1		1									

TABLE II.—CONTINUED.—*Divorces in Michigan, by counties and sex of com-*

Counties.	Sex of complainants.	Complainants in divorces granted, 1898.	Place of marriage.						Number of children.					
			Michigan.	Ohio, Indiana, Wisconsin.	Other states.	Canada.	Other foreign countries.	Unk.	0.	1.	2.	3.	4.	5.
Isabella.....	Total..	12	10	1				1	6	3	2			
	Males..	6	5					1	6					
	Fem... 6	5	1							3	2			
Jackson.....	Total..	64	54	1	4	1	1	3	29	9	13	8	4	
	Males..	16	14				1	1	7	4	2	2	1	
	Fem... 48	40	1	4			1	2	22	5	11	6	3	
Kalamazoo.....	Total..	57	39	6	9	1	2		28	14	7	4	1	1
	Males..	19	13	3	3				15	2	1			
	Fem... 38	26	3	6	1	2			13	12	6	4		1
Kalkaska.....	Total..	5	4		1				2	3				
	Males..	3	3						2	1				
	Fem... 2	1		1						2				
Kent.....	Total..	175	155	5	10	1	3	1	87	46	19	8	6	6
	Males..	37	32	2	2		1	1	20	10	2	2	2	1
	Fem... 138	123	3	8	1	2		1	67	36	17	6	4	5
Keweenaw.....	Total..													
	Males..													
	Fem... 1													
Lake.....	Total..	11	10			1			3	4	1	2	1	
	Males..	2	2						1	1				
	Fem... 9	8				1			3	3		2	1	
Lapeer.....	Total..	12	10			2			5	3	1	1		1
	Males..	2	1			1			1	1	1			
	Fem... 10	9				1			5	3		1		1
Leelanau.....	Total..	12	12						9		1	1	1	
	Males..	4	4						3			1		
	Fem... 8	8							6		1		1	
Lenawee.....	Total..	39	34	2	1		1	1	18	7	9	2	1	
	Males..	8	7					1	4	1	2			
	Fem... 31	27	2	1				1	14	6	7	2	1	
Livingston.....	Total..	8	6	1		1			2	6				
	Males..													
	Fem... 8	6	1			1			2	6				
Luce.....	Total..	1			1				1					
	Males..													
	Fem... 1				1				1					
Mackinac.....	Total..	5	3	1			1		4		1			
	Males..	3	2				1		2		1			
	Fem... 2	1	1						2					
Macomb.....	Total..	22	20		1	1			13	6	2	1		
	Males..	8	8						5	3				
	Fem... 14	12		1	1				8	3	2	1		
Manistee.....	Total..	6	3	2	1				2		1	1	1	
	Males..	2		1	1				1		1			
	Fem... 4	3	1						1			1	1	
Marquette.....	Total..	9	7		1		1		7	1		1		
	Males..	2	1				1		2					
	Fem... 7	6		1					5	1		1		
Mason.....	Total..	3	2	1					3					
	Males..	1	1						1					
	Fem... 2	1	1						2					
Mecosta.....	Total..	12	11		1				8	3	1			
	Males..	3	3						2	1				
	Fem... 9	8		1					6	2	1			
Menominee.....	Total..	9	5	4					3	3		1		2
	Males..	3	2	1					2	1				
	Fem... 6	3	3						1	2		1		2

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[illegible]

TABLE II.—CONTINUED.—*Divorces in Michigan, by counties and sex of com-*

Counties.	Sex of complainants.	Complainants, in divorces granted, 1898.	Place of marriage.						Number of chil-					
			Mich-igan.	Ohio, Indiana, Wis-consin.	Other states.	Can-ada.	Other for- eign coun-tries.	Unk.	0.	1.	2.	3.	4.	5.
Midland.....	Total..	10	10						3	4	1	2		
	Males..	1	1											
	Fem..	9	9						3	3	1	2		
Missaukee.....	Total..	9	9						4	2		1	2	
	Males..	3	3						2	1				
	Fem..	6	6						2	1		1	2	
Monroe.....	Total..	13	11	2					6	3	2	1	1	
	Males..	7	6	1					4	1	1		1	
	Fem..	6	5	1					2	2	1	1		
Montcalm.....	Total..	23	22		1				11	6	3	1	1	
	Males..	6	6						5	1				
	Fem..	17	16		1				6	6	2	1	1	
Montmorency...	Total..	3	3						1		2			
	Males..	1	1								1			
	Fem..	2	2						1		1			
Muskegon.....	Total..	34	31	1	1		1		20	7	4		1	1
	Males..	11	9	1	1				6	2	1			
	Fem..	23	22				1		14	5	3			1
Newaygo.....	Total..	16	14	1	1				6	4	2	1	2	1
	Males..	6	4	1	1				2	1	1		2	
	Fem..	10	10						4	3	1	1		1
Oakland.....	Total..	38	29	2	3	4			21	6	5	3	1	
	Males..	12	9	1	1	1			9	3				
	Fem..	26	20	1	2	3			12	3	5	3	1	
Oceana.....	Total..	18	15		3				10	3	5			
	Males..	5	3		2				3	1	1			
	Fem..	13	12		1				7	2	4			
Ogemaw.....	Total..	2	2						1				1	
	Males..													
	Fem..	2	2						1				1	
Ontonagon.....	Total..	2	2						1		1		1	
	Males..	1	1						1					
	Fem..	1	1								1			
Osceola.....	Total..	10	10						3	1	2	2		
	Males..	2	2						1					
	Fem..	8	8						2	1	2	2	1	
Oscoda.....	Total..	1	1						1					
	Males..	1	1						1					
	Fem..													
Otsego.....	Total..	5	5						3		1			
	Males..	3	3						3					
	Fem..	2	2								1			
Ottawa.....	Total..	5	5						3	2				
	Males..	1	1						1					
	Fem..	4	4						2	2				
Presque Isle.....	Total..													
	Males..													
	Fem..													
Roscommon.....	Total..													
	Males..													
	Fem..													
Saginaw.....	Total..	58	50	2	2	3	1		27	13	10	2	2	1
	Males..	16	14		2				10	2	2	1		
	Fem..	42	36	2		3	1		17	11	8	1	2	1

TABLE II.—CONCLUDED.—*Divorces in Michigan, by counties and sex of com-*

Counties.	Sex of complainants.	Complainants in divorces granted, 1898.	Place of marriage.						Number of children.					
			Michigan.	Ohio, Indiana, Wisconsin.	Other states.	Canada.	Other foreign countries.	Unk.	0.	1.	2.	3.	4.	5.
Sanilac.....	Total..	6	5	1					1	3		1	1	
	Males..	3	2	1						1		1	1	
	Fem... 3	3							1	2				
Schoolcraft.....	Total..	4	3			1			2	2				
	Males..													
	Fem... 4	3				1			2	2				
Shiawassee.....	Total..	46	41	2	1	2			21	12	7	3	3	
	Males..	11	10			1			6	1	2		2	
	Fem... 35	31	2	1	1				15	11	5	3	1	
St. Clair.....	Total..	29	20	1	1	6	1		18	3	4	2		
	Males..	6	3			3			3	2	1			
	Fem... 23	17	1	1	3	1			15	1	3	2		
St. Joseph.....	Total..	17	15	1	1				9	4	3	1		
	Males..	3	2		1				2	1				
	Fem... 14	13	1						9	2	2	1		
Tuscola.....	Total..	21	17	1		3			11	4	3	2	1	
	Males..	6	4			2			4			2		
	Fem... 15	13	1			1			7	4	3		1	
Van Buren.....	Total..	39	34		5				21	11	3	2	1	
	Males..	14	11		3				11	1	1	1		
	Fem... 25	23		2					10	10	2	1	1	
Washtenaw.....	Total..	30	27	1	2				9	8	4	1	1	
	Males..	7	6		1				2	1				
	Fem... 23	21	1	1					7	7	4	1	1	
Wayne.....	Total..	249	150	11	20	62	3	3	135	56	28	12	12	3
	Males..	56	27	2	5	18	2	2	39	8	3		3	1
	Fem... 193	123	9	15	44	1	1	1	96	48	25	12	9	2
Wexford.....	Total..	28	24		2			2	10	6	6	1	2	2
	Males..	8	7		1				3	2	3			
	Fem... 20	17		1				2	7	4	3	1	2	2

DIVORCES

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plainant, number of children in family and duration of marriage before divorce.

Children in family.						Duration of marriage before divorce.																
6.	7.	8.	9.	10.	Unk.	Under 1 year.	1.	2.	3.	4.	Under 5 years.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	Unk.	
								1				3	1	1								
								1				1	1	1								
												3										
									1			1	1	1								
									1			1	1	1								
								5	4	1	14	16	6	1	7	2						
								2			4	4	1		2	2						
								5	2	1	12	12	5	1	5							
		1			1	1	1	4	1	1	8	9	5	2	1	3			1			
									1	1	3	2								1		
		1			1		1	4			5	7	5	2	1	3						
							1		2		3	7	3	2	1	1						
							1		2		3	7	1	2		1						
							2	1	2		5	7	3	3	1	2						
								1	1		2	1		2		1						
							2		1		3	6	3	1	1	1						
1								1	6	2	12	10	6	5	4	2						
1								1	5	2	9	5	4	3	4							
	1					6		2	2	2	7	11	7	4					1			
						4		1	1		2	3	2									
	1					2		2	1	1	5	8	5	4								
		2			1	4	9	21	18	17	69	77	53	24	16	9						
		1			1			2	4	4	10	24	12	3	5	2						
		1				4	9	19	14	13	59	53	41	21	11	7						
		1					2	1	1	1	5	7	5	5	5	1						
							1			1	2	2	2	1		1						
		1					1	1	1		3	5	3	4	5							

TABLE III.—Causes of divorce in Michigan, by sex of complainant, during the year marriage

Causes alleged in petitions for divorces granted in 1898.	Sex of complainant.	Complainants in divorces granted, 1898.	Place of marriage.						Number of chil-					
			Mich-igan.	Ohio, Indiana, Wis-consin.	Other states.	Can-ada.	Other for- eign coun-tries.	Unk.	0.	1.	2.	3.	4.	5.
ALL CAUSES.....	Total..	1,808	1,468	78	115	111	21	15	890	412	239	115	66	34
	Males..	472	364	25	34	35	9	5	288	77	48	24	21	3
	Fem..	1,336	1,104	53	81	76	12	10	602	335	191	91	45	31
Adultery	Total..	43	33	2	2	3	2	1	23	9	3	2	3	---
	Males..	30	22	2	2	1	2	1	15	6	2	2	2	---
	Fem..	13	11	---	---	2	---	---	8	3	1	---	1	---
Adultery and cruelty..	Total..	6	4	---	---	2	---	---	2	2	2	---	---	---
	Males..	4	2	---	---	2	---	---	2	1	1	---	---	---
	Fem..	2	2	---	---	---	---	---	---	1	1	---	---	---
Adultery, cruelty and desertion.....	Total..	1	---	---	1	---	---	---	1	---	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	---	---	1	---	---	---	1	---	---	---	---	---
Adultery, cruelty and drunkenness.....	Total..	1	1	---	---	---	---	---	1	---	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	1	---	---	---	---	---	1	---	---	---	---	---
Adultery, cruelty and non-support.....	Total..	1	1	---	---	---	---	---	---	1	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	1	---	---	---	---	---	---	1	---	---	---	---
Adultery and deser- tion.....	Total..	4	1	---	---	3	---	---	2	---	---	1	---	---
	Males..	3	1	---	---	2	---	---	1	---	---	1	---	---
	Fem..	1	---	---	---	1	---	---	1	---	---	---	---	---
Adultery, desertion and non-support.....	Total..	1	1	---	---	---	---	---	---	1	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	1	---	---	---	---	---	---	1	---	---	---	---
Adultery and non-sup- port.....	Total..	1	1	---	---	---	---	---	---	1	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	1	---	---	---	---	---	---	1	---	---	---	---
Bigamy.....	Total..	1	1	---	---	---	---	---	1	---	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	1	---	---	---	---	---	1	---	---	---	---	---
Cruelty	Total..	551	466	22	26	27	3	7	265	119	75	35	24	12
	Males..	158	130	9	7	10	1	1	101	21	20	5	6	2
	Fem..	393	336	13	19	17	2	6	164	98	55	30	18	10
Cruelty and deception.....	Total..	1	1	---	---	---	---	---	1	---	---	---	---	---
	Males..	1	1	---	---	---	---	---	1	---	---	---	---	---
	Fem..	---	---	---	---	---	---	---	---	---	---	---	---	---
Cruelty and desertion.....	Total..	39	29	1	4	3	2	---	22	4	5	2	2	---
	Males..	14	11	1	1	1	---	---	10	2	2	1	1	---
	Fem..	25	18	---	3	2	2	---	12	4	3	2	1	---
Cruelty, desertion and drunkenness.....	Total..	1	---	---	1	---	---	---	1	---	---	---	---	---
	Males..	1	---	---	1	---	---	---	1	---	---	---	---	---
	Fem..	---	---	---	---	---	---	---	---	---	---	---	---	---
Cruelty, desertion and non-support.....	Total..	17	13	1	2	1	---	---	7	5	2	2	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	17	13	1	2	1	---	---	7	5	2	2	---	---
Cruelty, desertion, drunkenness and non-support.....	Total..	1	1	---	---	---	---	---	---	1	---	---	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	1	1	---	---	---	---	---	---	1	---	---	---	---
Cruelty and drunken- ness.....	Total..	18	14	1	---	2	1	---	5	4	4	1	1	1
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	18	14	1	---	2	1	---	5	4	4	1	1	1
Cruelty, drunkenness and non-support.....	Total..	13	12	1	---	---	---	---	4	4	2	3	---	---
	Males..	---	---	---	---	---	---	---	---	---	---	---	---	---
	Fem..	13	12	1	---	---	---	---	4	4	2	3	---	---

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Children in family.						Duration of marriage before divorce.																
6.	7.	8.	9.	10.	Unk.	Under 1 year.	1.	2.	3.	4.	Under 5 years.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	Unk.	
17 2 15	10 10	8 2 6	3 3	2 2	12 7 5	27 10 17	83 19 64	131 32 99	129 35 94	124 46 78	494 142 352	583 155 428	313 75 238	195 38 157	127 34 93	69 22 47	12 2 10	10 3 7	1	1	1	4 1 3
---	---	---	---	---	3 3	2 1	2 1	5 3	2 2	2 2	13 9 4	16 12 4	4 3 1	5 3 2	3 2 1	1 1	---	---	---	---	1	
---	---	---	---	---	---	---	1	---	---	---	1 1	3 2 1	1 1	---	---	1 1	---	---	---	---	---	
---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	
---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	
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---	---	---	---	---	1 1	---	---	---	1	---	1	1	1	---	---	1	---	---	---	---	---	
---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	1	---	---	---	---	---	---	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
9 2 7	2 2	5 5	1 1	1 1	3 1 2	8 3 5	38 13 25	45 13 32	28 9 19	33 12 21	152 50 102	175 52 123	78 22 56	68 11 57	46 12 34	28 10 18	1 1	2 1	---	---	1	
---	---	---	---	---	---	1	---	---	---	---	1	1	---	---	---	---	---	---	---	---	---	
1 1	1 1	1 1	1 1	---	---	3 2 1	---	---	5 1 4	5 4 1	13 7 6	10 4 6	4 1 3	4 4	4 4	3 1 2	1 1	---	---	---	---	
---	---	---	---	---	---	---	---	---	1 1	---	1 1	---	---	---	---	---	---	---	---	---	---	
---	1 1	---	---	---	---	---	---	2 2	1 1	---	3 3	4 4	7 7	1 1	1 1	1 1	---	---	---	---	---	
---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	
1 1	---	---	---	---	1 1	---	1 1	2 2	1 1	1 1	5 5	6 6	4 4	1 1	2 2	---	---	---	---	---	---	
---	---	---	---	---	---	---	1 1	2 2	1 1	---	---	4 4	4 4	---	1 1	---	---	---	---	---	---	
---	---	---	---	---	---	---	1 1	2 2	1 1	---	---	4 4	4 4	---	1 1	---	---	---	---	---	---	

TABLE III.—CONCLUDED.—*Causes of divorce in Michigan, during the year 1898.*

Causes alleged in petitions for divorces granted in 1898.	Sex of complainant.	Complainants in divorces granted, 1898.	Place of marriage.						Number of chil-					
			Mich.igan.	Ohio, Indiana, Wisconsin.	Other states.	Canada.	Other foreign countries.	Unk.	0.	1.	2.	3.	4.	5.
Cruelty and imprisonment	{ Total Males Fem	1 1 1	1 1						1 1					
Cruelty and non-support	{ Total Males Fem	203 1 202	172 1 171	8 1	14 14	9 9			85 1 85	48 47	37 37	14 14	7 7	7 7
Defendant divorced in another state	{ Total Males Fem	2 1 1	2 1 1							1 1 1		1 1		
Desertion	{ Total Males Fem	480 245 235	380 188 194	20 11 9	36 22 14	31 18 13	9 6 3	4 2 2	256 147 109	113 46 67	53 23 30	31 14 17	16 11 5	6 1 5
Desertion and bigamy	{ Total Males Fem	1 1 1	1 1									1 1		
Desertion and drunkenness	{ Total Males Fems	2 1 2	2 1						1 1		1 1			
Desertion, drunkenness and non-support	{ Total Males Fem	1 1 1					1 1							1 1
Desertion and non-support	{ Total Males Fem	98 1 97	75 1 74	5 1	9 9	7 7	2 2		43 1 42	29 29	15 15	5 5	2 2	2 2
Drunkenness	{ Total Males Fem	30 4 26	19 1 18	3 1 3	4 1 3	2 1 1	1 1 1	1 1 1	13 3 10	7 7	5 5	2 1 1	1 1 1	
Drunkenness and non-support	{ Total Males Fem	22 1 22	19 1 19	1 1	1 1			1 1	13 13	4 4	3 3	1 1		1 1
Fraud	{ Total Males Fem	4 4 4	4 4 4						2 2 2	2 2				
Illegal age	{ Total Males Fem	4 1 3	3 1 3	1 1					4 1 3					
Imprisonment	{ Total Males Fem	8 1 8	5 1 5	1 1		2 2			2 2 2	2 2		2 2		
Insanity	{ Total Males Fem	1 1 1	1 1							1 1				
Non-support	{ Total Males Fem	241 1 241	196 1 196	10 1	15 15	19 19		1 1	130 130	52 52	32 32	10 10	9 9	3 3
Non-support, fraud and deceit	{ Total Males Fem	1 1 1	1 1						1 1					
Null marriage	{ Total Males Fem	1 1 1	1 1						1 1					
Unknown	{ Total Males Fem	8 3 5	7 2 5	1 1					3 2 1	2 2		2 2	1 1	

CAUSES OF DIVORCE

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showing number of children in family and duration of marriage before divorce.

Children in family.						Duration of marriage before divorce.																	
6.	7.	8.	9.	10.	Unk.	Under 1 year.	1.	2.	3.	4.	Under 5 years.	5 to 9.	10 to 14.	15 to 19.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 to 44.	45 to 49.	Unk.		
									1		1												
									1		1												
1	4					4	4	21	12	13	54	63	49	23	6	4	3						
1	4					4	4	21	12	13	54	63	48	23	6	4	3						
												1		1									
												1		1									
2		1			2	4	3	20	42	41	110	158	89	56	36	19	5	6					
2		1			2	2	3	12	22	25	64	82	47	23	18	7	1	2					
								8	20	16	46	76	42	33	18	12	4	4					
													1										
													1										
													2										
													2										
														1									
														1									
	1			1			4	3	7	8	22	40	17	7	9	1	1			1			
	1			1			4	3	7	7	21	40	17	7	9	1	1			1			
	1						1			4	5	10	6	3	3	2		1					
	1						1			2	3	10	6	3	2	1							
								2	1	1	4	8	7	1	2								
								2	1	1	4	8	7	1	2								
						2					4												
						2		2			4												
							1	1	1		3	1											
							1		1		1												
									1		2	1											
1				1					1	1	2	2	2	1	1								
1				1					1	1	2	2	2	1	1								
														1									
														1									
2		1			2	3	24	24	22	15	88	77	35	21	10	8	1	1					
2		1			2	3	24	24	22	15	88	77	35	21	10	8	1	1					
							1				1												
							1				1												
							1				1												
							1				1												
							1	2	1		4	1	1		2								
							1	1	1		1	1			1								
							1		1		1		1		1								
							1		1		3		1		1								

PRIMARY TABLES RELATING TO BIRTHS IN MICHIGAN
ACCORDING TO THE ENUMERATION OF SUPER-
VISORS AND ASSESSORS FOR THE YEAR 1898.

TABLE I.—*Births in Michigan, by months, counties and sex, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)*

TABLE II.—*Births in Michigan, by nativity of parents, counties and sex, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)*

TABLE III.—*Stillbirths, twins and illegitimate births in Michigan by counties as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)*

TABLE IV.—*Stillbirths, twins and illegitimate births in Michigan, by months and sex, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)*

TABLE V.—*Stillbirths, twins and illegitimate births in Michigan, by nativity of parents, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)*

NOTE.—*Secondary Tables, containing birth rates and comparisons with previous years, may be found on preceding pages of this Report, together with the descriptive text. It may be noted that no comparisons with other States or countries are given for the reason that the returns of births, obtained by means of enumeration after the close of the year by supervisors and assessors, are grossly inaccurate. Perhaps one-third of all the births that actually occur in the State escape enumeration. The returns are valuable for certain internal comparisons, as pointed out in the text on this subject, but they should be used with great caution for all purposes, and especially for the comparative study of birth rates. The tables relating to births are placed last because of their unreliable character and also because the tardiness of the returns under the old law (last amended in 1860) causes them to be received at the Department of State long after the deaths, marriages and divorces have been compiled.*

BIRTHS

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TABLE I.—Births in Michigan, by months, counties and sex, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)

State and counties.	Sex.	Year 1898.	Months 1898.												
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
STATE.....	Total.	43,462	3,043	3,173	3,856	3,534	3,724	3,554	3,612	3,894	3,807	3,801	3,492	3,920	52
	Males.	22,420	1,567	1,628	2,002	1,809	1,858	1,824	1,855	2,050	1,970	1,957	1,810	2,074	16
	Fem..	20,972	1,475	1,544	1,846	1,717	1,864	1,724	1,751	1,840	1,832	1,838	1,672	1,841	28
	(Unk..	70	1	1	8	8	2	6	6	4	5	6	10	5	8
Alcona.....	Total.	72	2	2	3	7	4	5	10	9	10	5	7	7	1
	Males.	36	1	1	1	2	1	4	4	5	7	3	6	5	.....
	Fem..	36	1	1	2	5	3	5	6	4	3	2	1	2	1
Alger.....	Total.	101	4	7	17	11	14	7	5	10	7	6	5	7	1
	Males.	51	1	5	9	5	7	4	2	5	3	3	3	3	1
	Fem..	50	3	2	8	6	7	3	3	5	4	3	2	4	.....
Allegan.....	Total.	670	37	45	53	55	60	64	45	75	69	57	51	58	1
	Males.	334	20	19	28	24	36	31	22	39	33	32	25	25	.....
	Fem..	336	17	26	25	31	24	33	23	36	36	25	26	33	1
Alpena.....	Total.	295	14	15	25	23	13	24	28	31	33	25	30	30	4
	Males.	143	5	7	12	12	5	14	15	18	13	12	15	15	.....
	Fem..	152	9	8	13	11	8	10	13	13	20	13	15	15	4
Antrim.....	Total.	221	16	11	17	15	21	16	22	22	23	23	21	14	.....
	Males.	110	6	6	7	8	12	9	10	11	12	16	8	5	.....
	Fem..	109	10	5	10	7	8	7	12	10	11	7	13	9	.....
	Unk..	2	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	.....	.....
Arenac.....	Total.	212	8	11	12	20	27	13	23	17	16	24	17	20	4
	Males.	105	6	4	6	9	12	7	13	9	7	14	7	10	1
	Fem..	107	2	7	6	11	15	6	10	8	9	10	10	10	3
Baraga.....	Total.	103	10	10	8	5	8	12	11	8	8	8	2	13	.....
	Males.	50	7	7	4	2	1	3	5	3	3	6	1	8	.....
	Fem..	53	3	3	4	3	7	9	6	5	5	2	1	5	.....
Barry.....	Total.	324	25	24	29	20	28	37	27	26	27	22	33	26	.....
	Males.	167	13	14	13	9	16	18	12	15	15	16	12	14	.....
	Fem..	156	12	10	16	10	12	19	15	11	12	6	21	12	.....
	Unk..	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Bay.....	Total.	1,373	84	109	131	92	111	115	114	120	137	123	128	107	2
	Males.	737	49	61	67	53	61	70	61	70	67	55	65	57	1
	Fem..	635	35	48	64	39	50	45	53	50	70	68	62	50	1
	Unk..	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Benzie.....	Total.	170	5	8	24	17	14	12	11	24	20	12	7	16	.....
	Males.	88	1	5	14	9	6	9	4	12	12	3	4	9	.....
	Fem..	82	4	3	10	8	8	3	7	12	8	9	3	7	.....
Berrien.....	Total.	611	38	44	56	47	44	51	58	58	58	63	48	46	.....
	Males.	305	20	19	27	20	26	29	26	28	32	27	23	28	.....
	Fem..	304	18	25	29	26	18	22	31	30	26	36	25	18	.....
	Unk..	2	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....
Branch.....	Total.	352	24	22	31	22	27	43	41	30	32	26	24	30	.....
	Males.	185	11	10	13	10	13	22	25	20	19	14	12	16	.....
	Fem..	167	13	12	18	12	14	21	16	10	13	12	12	14	.....
Calhoun.....	Total.	599	48	47	42	52	68	35	55	57	49	56	52	38	.....
	Males.	318	16	25	25	25	41	16	37	34	22	32	25	20	.....
	Fem..	279	32	22	17	27	27	19	18	21	27	24	27	18	.....
	Unk..	2	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cass.....	Total.	262	17	22	15	25	26	23	20	24	22	15	20	33	.....
	Males.	121	7	12	6	9	9	9	8	12	12	11	12	14	.....
	Fem..	140	10	10	9	16	17	14	12	12	9	4	8	19	.....
	Unk..	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Charlevoix.....	Total.	159	15	11	9	12	15	17	21	16	6	12	14	11	.....
	Males.	72	7	5	2	4	8	9	8	5	4	7	8	5	.....
	Fem..	87	8	6	7	8	7	8	13	11	2	5	6	6	.....
Cheboygan.....	Total.	292	16	23	29	24	26	27	30	26	23	29	22	17	.....
	Males.	172	12	10	18	13	17	17	18	17	11	20	10	9	.....
	Fem..	120	4	13	11	11	9	10	12	9	12	9	12	8	.....

Counties.	Sex.	Year 1898.	Months, 1898.												Unk.
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	
Chippewa.....	Total.	296	18	24	24	25	24	28	26	28	28	32	17	22	.....
	Males.	143	7	14	15	12	13	10	14	16	11	13	5	13	.....
	Fem..	153	11	10	9	13	11	18	12	12	17	19	12	9	.....
Clare.....	Total.	159	2	7	14	12	20	15	15	22	17	12	15	8	.....
	Males.	89	2	3	10	8	6	8	9	16	10	8	6	3	.....
	Fem..	70	.....	4	4	4	14	7	6	6	7	4	9	5	.....
Clinton.....	Total.	449	25	46	45	27	49	32	36	43	46	36	32	32	.....
	Males.	221	16	21	21	16	21	17	12	17	25	21	21	13	.....
	Fem..	228	9	25	24	11	28	15	24	26	21	15	11	19	.....
Crawford.....	Total.	39	2	.....	2	2	3	4	3	6	1	6	5	5	.....
	Males.	22	2	.....	2	2	.....	4	2	3	.....	3	3	1	.....
	Fem..	17	.....	.....	.....	.....	3	.....	1	3	1	3	2	4	.....
Delta.....	Total.	482	26	40	36	39	45	43	42	36	44	40	39	52	.....
	Males.	250	17	20	17	19	19	24	25	20	26	22	20	21	.....
	Fem..	232	9	20	19	20	26	19	17	16	18	18	19	31	.....
Dickinson.....	Total.	552	52	38	36	45	47	35	57	44	46	46	45	61	.....
	Males.	281	20	19	19	25	23	16	35	18	23	23	25	35	.....
	Fem..	270	32	19	17	19	24	19	22	26	23	23	20	26	.....
Eaton.....	Total.	348	24	15	25	26	40	27	25	21	32	44	39	30	.....
	Males.	166	10	9	9	13	21	9	7	14	15	27	18	14	.....
	Fem..	182	14	6	16	13	19	18	18	7	17	17	21	16	.....
Emmet.....	Total.	238	7	14	25	20	16	27	19	25	23	16	25	21	.....
	Males.	129	2	10	15	10	5	17	14	11	11	8	13	13	.....
	Fem..	109	5	4	10	10	11	10	5	14	12	8	12	8	.....
Genesee.....	Total.	460	25	37	35	42	29	43	41	43	40	42	29	54	.....
	Males.	238	12	23	14	22	17	21	23	20	20	19	20	27	.....
	Fem..	222	13	14	21	20	12	22	18	23	20	23	9	27	.....
Gladwin.....	Total.	134	9	9	9	18	13	13	14	14	12	10	4	9	.....
	Males.	69	6	2	5	9	7	7	5	9	6	5	1	7	.....
	Fem..	65	3	7	4	9	6	6	9	5	6	5	3	2	.....
Gogebio.....	Total.	481	51	44	41	25	44	28	26	44	45	41	43	49
	Males.	240	23	23	24	14	21	9	17	18	21	22	30	38

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TABLE I.—CONTINUED.—*Births in Michigan, by months, counties and sex, 1898.*

Counties.	Sex.	Year 1898.	Months, 1898.												
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
Iosco.....	{ Total..	236	16	10	17	27	25	29	19	19	18	15	14	27	.....
	{ Males..	116	7	6	9	13	13	15	7	12	10	6	4	14	.....
	{ Fem...	118	9	4	8	14	12	12	12	7	8	9	10	13	.....
	{ Unk...	2						2							.....
Iron.....	{ Total..	30	5	1	1		3	2	5	4	1	1	3	4	.....
	{ Males..	17	2	1			2	1	4	2	1		2	2	.....
	{ Fem...	13	3		1		1	1	1	2		1	1	2	.....
Isabella.....	{ Total..	386	17	21	23	39	44	45	29	41	31	32	26	38	.....
	{ Males..	201	6	11	14	22	22	24	13	29	15	14	14	17	.....
	{ Fem...	185	11	10	9	17	22	21	16	12	16	18	12	21	.....
Jackson.....	{ Total..	706	45	42	50	50	65	65	66	57	54	70	74	74	.....
	{ Males..	338	25	18	31	23	30	23	29	35	31	30	30	34	.....
	{ Fem...	366	20	24	28	28	35	35	35	31	26	39	40	40	.....
	{ Unk...	2							1				1		.....
Kalamazoo.....	{ Total..	591	50	41	40	49	43	39	49	58	53	59	51	46	.....
	{ Males..	318	28	24	24	23	20	18	32	36	26	31	30	23	.....
	{ Fem...	254	22	17	15	24	22	21	15	22	26	27	19	22	.....
	{ Unk...	19			1	2	1		2		1		2	1	.....
Kalkaska.....	{ Total..	95	5	6	9	13	7	4	5	11	13	9	4	9	.....
	{ Males..	45	5	3	5	7	1	1	3	5	8	1	2	4	.....
	{ Fem...	50		3	4	6	6	3	2	6	5	8	2	5	.....
Kent.....	{ Total..	2,282	148	174	93	175	185	182	193	189	233	212	190	206	.....
	{ Males..	1,212	74	95	110	93	94	107	100	105	121	120	87	105	.....
	{ Fem...	1,069	74	79	83	82	91	75	93	84	112	91	103	101	.....
	{ Unk...	1										1			.....
Keweenaw.....	{ Total..	71	4	3	6	11	3	2	8	8	4	7	7	8	.....
	{ Males..	37	1	1	4	8	1	2	3	4	2	6	3	2	.....
	{ Fem...	33	3	2	2	2	2		5	4	2	1	4	6	.....
	{ Unk...	1				1									.....
Lake.....	{ Total..	123	4	8	17	3	14	24	10	5	10	10	8	10	.....
	{ Males..	65	2	3	7	3	4	15	6	2	7	4	5	7	.....
	{ Fem...	58	2	5	10		10	9	4	3	3	6	3	3	.....
Lapeer.....	{ Total..	389	26	24	30	30	43	44	34	29	28	43	32	26	.....
	{ Males..	199	15	13	14	16	29	19	19	13	11	20	20	10	.....
	{ Fem...	190	11	11	16	14	14	25	15	16	17	23	12	16	.....
Leelanau.....	{ Total..	242	7	10	22	24	31	16	27	14	26	31	15	19	.....
	{ Males..	119	4	6	11	9	13	9	15	5	8	18	9	12	.....
	{ Fem...	123	3	4	11	15	18	7	12	9	18	13	6	7	.....
Lenawee.....	{ Total..	565	38	36	40	42	42	51	47	50	60	50	60	49	.....
	{ Males..	281	16	17	16	17	23	29	24	25	30	26	32	26	.....
	{ Fem...	280	22	18	24	25	19	22	23	25	29	24	26	23	.....
	{ Unk...	4		1							1		2		.....
Livingston.....	{ Total..	257	7	18	15	22	16	23	19	30	27	28	25	26	.....
	{ Males..	130	5	12	9	11	7	10	9	16	16	11	12	12	.....
	{ Fem...	127	2	6	6	11	9	13	10	14	11	17	13	14	.....
Luce.....	{ Total..	48	2	6	6	3		2	3	3	6	6	5	6	.....
	{ Males..	19	2	2	1			1		1	3	3	2	4	.....
	{ Fem...	29		4	5	3		1	3	2	3	3	3	2	.....
Mackinac.....	{ Total..	97	4	5	9	9	9	13	9	13	12	2	2	10	.....
	{ Males..	49	2	4	3	7	5	5	2	6	8	1	2	4	.....
	{ Fem...	47	2	1	6	2	4	7	7	7	4	1		6	.....
	{ Unk...	1						1							.....
Macomb.....	{ Total..	585	50	46	61	44	45	55	41	41	51	45	42	64	.....
	{ Males..	301	26	20	36	21	21	33	15	20	24	25	23	37	.....
	{ Fem...	284	24	26	25	23	24	22	26	21	27	20	19	27	.....
Manistee.....	{ Total..	740	50	43	54	72	67	65	71	61	73	60	61	63	.....
	{ Males..	384	27	25	29	38	43	28	29	30	37	36	28	34	.....
	{ Fem...	355	23	18	25	33	24	37	42	31	36	24	33	29	.....
	{ Unk...	1				1									.....

TABLE I.—CONTINUED.—*Births in Michigan, by months, counties and sex, 1898.*

BIRTHS

TABLE I.—CONCLUDED.—Births in Michigan, by months, counties and sex, 1898.

Counties.	Sex.	Year 1898.	Months, 1898.												
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
Ottawa	Total.	850	62	55	77	75	80	73	53	77	78	83	69	67	1
	Males.	427	36	33	38	42	43	30	24	38	40	30	39	34	—
	Fem..	417	26	22	37	32	37	43	29	39	37	52	30	32	1
	Unk..	6	—	—	2	1	—	—	—	—	1	1	—	1	—
Presque Isle..	Total.	136	4	10	11	18	13	14	10	16	13	10	7	10	—
	Males.	65	1	6	9	7	4	4	5	8	5	7	4	5	—
	Fem..	71	3	4	2	11	9	10	5	8	8	3	3	5	—
Roscommon..	Total.	20	1	1	2	1	1	—	1	2	2	2	2	5	—
	Males.	15	1	—	2	1	1	—	1	2	2	1	2	2	—
	Fem..	5	—	1	—	—	—	—	—	—	—	1	—	3	—
Saginaw	Total.	1,711	143	150	177	177	137	123	136	142	132	114	123	156	1
	Males.	896	72	76	89	91	72	62	67	77	85	60	61	83	1
	Fem..	815	71	74	88	86	65	61	69	65	47	54	62	73	—
Sanilac	Total.	686	35	41	55	60	67	56	71	74	63	58	58	48	—
	Males.	361	23	24	35	23	35	29	35	37	35	29	31	25	—
	Fem..	325	12	17	20	37	32	27	36	37	28	29	27	23	—
Schoolcraft..	Total.	187	11	10	26	19	22	16	18	15	15	9	7	19	—
	Males.	81	5	2	13	7	9	7	11	6	4	4	5	8	—
	Fem..	106	6	8	13	12	13	9	7	9	11	5	2	11	—
Shiawassee...	Total.	374	24	22	44	42	35	32	24	32	31	30	28	29	1
	Males.	192	14	8	23	28	20	21	11	11	16	13	13	14	—
	Fem..	180	10	14	21	14	15	11	13	21	15	17	14	14	1
	Unk..	2	—	—	—	—	—	—	—	—	—	—	1	1	—
St. Clair	Total.	803	38	58	59	68	77	68	68	67	85	78	63	73	1
	Males.	433	20	32	40	27	39	38	32	47	48	48	29	42	—
	Fem..	367	18	26	18	41	38	27	30	35	38	30	34	31	1
	Unk..	3	—	—	1	—	—	2	—	—	—	—	—	—	—
St. Joseph	Total.	314	15	15	33	25	29	30	24	33	19	28	23	40	—
	Males.	156	7	11	17	13	13	13	10	16	7	16	11	22	—
	Fem..	158	8	4	16	12	16	17	14	17	12	12	12	18	—
Tuscola	Total.	578	31	29	56	53	50	49	40	59	67	51	46	45	2
	Males.	303	15	16	29	33	26	24	21	29	36	23	26	24	1
	Fem..	275	16	13	27	20	24	25	19	30	31	28	20	21	1
Van Buren	Total.	401	25	39	36	34	26	45	32	37	28	34	36	29	—
	Males.	205	21	20	17	22	11	15	13	17	18	15	21	15	—
	Fem..	195	4	19	18	12	15	30	19	20	10	19	15	14	—
	Unk..	1	—	—	1	—	—	—	—	—	—	—	—	—	—
Washtenaw...	Total.	504	20	32	47	41	40	42	38	61	49	48	42	42	2
	Males.	265	6	20	27	22	19	24	19	36	22	27	19	23	1
	Fem..	239	14	12	20	19	21	18	19	25	27	21	23	19	1
Wayne	Total.	8,550	367	679	801	624	670	614	694	692	679	823	666	830	11
	Males.	4,424	730	327	406	323	333	315	360	373	362	415	384	460	6
	Fem..	4,119	376	352	395	301	337	298	334	319	317	406	310	369	5
	Unk..	7	1	—	—	—	—	1	—	—	—	2	2	1	—
Wexford	Total.	302	16	15	33	25	24	26	24	28	25	27	32	27	—
	Males.	142	6	8	14	12	13	12	13	13	14	11	14	12	—
	Fem..	159	10	7	19	13	11	14	11	15	11	16	17	15	—
	Unk..	1	—	—	—	—	—	—	—	—	—	—	1	—	—

TABLE II.—Births in Michigan by nativity of parents, counties and sex, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)

TABLE II.—CONTINUED.—*Births by counties, parent nativity and sex, 1898.*

Counties.	Sex.	Children born 1898.	Nativity of parents of children born in 1898.								
			Both native born.	Both foreign born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		Both Unk.
							Father—		Mother—		
							Native.	Foreign.	Native.	Foreign.	
Charlevoix.....	Total..	159	86	25	29	18	1				
	Males..	72	37	11	16	8					
	Fem...	87	49	14	13	10	1				
Cheboygan.....	Total..	292	109	85	57	25		1		1	10
	Males..	172	64	51	31	16		1		3	6
	Fem...	120	45	34	26	9			1	1	4
Chippewa.....	Total..	296	43	186	31	26	2	1	1		6
	Males..	143	17	94	12	15	1				4
	Fem...	153	26	92	19	11	1	1	1		2
Clare.....	Total..	159	87	25	33	13	1				
	Males..	89	50	15	17	6	1				
	Fem...	70	37	10	16	7					
Clinton.....	Total..	449	357	24	26	23	3		5		11
	Males..	221	172	14	15	9	1		4		6
	Fem...	228	185	10	11	14	2		1		5
Crawford.....	Total..	39	19	10	5	4		1			
	Males..	22	10	6	2	4					
	Fem...	17	9	4	3			1			
Delta.....	Total..	482	106	279	70	25	1		1		
	Males..	250	49	149	38	12	1		1		
	Fem...	232	57	130	32	13					
Dickinson.....	Total..	552	37	453	40	20		1		1	
	Males..	281	19	237	17	8					
	Fem...	270	18	215	23	12		1		1	
	Unk...	1		1							
Eaton.....	Total..	348	313	4	16	12			3		
	Males..	166	151	3	4	6			2		
	Fem...	182	162	1	12	6			1		
Emmet.....	Total..	238	148	37	29	20			2		2
	Males..	129	77	23	13	13			1		2
	Fem...	109	71	14	16	7			1		
Genesee.....	Total..	460	348	32	50	28			1		1
	Males..	238	181	17	24	15					1
	Fem...	222	167	15	26	13			1		
Gladwin.....	Total..	134	55	36	30	8	1		1	1	2
	Males..	69	29	17	14	6	1			1	1
	Fem...	65	26	19	16	2			1		1
Gogebic.....	Total..	481	29	402	30	17	1	1			1
	Males..	240	16	202	14	6		1			1
	Fem...	241	13	200	16	11	1				
Gd. Traverse ..	Total..	253	168	30	39	15			1		
	Males..	129	85	15	21	7			1		
	Fem...	124	83	15	18	8					
Gratiot.....	Total..	474	403	19	37	14			1		
	Males..	235	206	7	14	7			1		
	Fem...	239	197	12	23	7					
Hillsdale.....	Total..	300	272	3	13	9			2		1
	Males..	167	150	3	8	3			2		1
	Fem...	133	122		5	6					
Houghton.....	Total..	2,020	309	1,315	293	97			2	4	
	Males..	1,039	170	670	142	54			1	2	
	Fem...	980	139	645	150	43			1	2	
	Unk...	1			1						

TABLE II.—CONTINUED.—*Births by counties, parent nativity and sex, 1898.*

Counties.	Sex.	Children born, 1898.	Nativity of parents of children born in 1898.								
			Both native born.	Both foreign born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		Both Unk.
							Father—		Mother—		
							Native.	Foreign.	Native.	Foreign.	
Huron.....	Total..	765	193	257	183	99	1		1		
	Males..	384	102	139	93	48			1		
	Fem... 381	91	148	90	51	1					
Ingham.....	Total..	515	385	65	38	20			1	2	
	Males..	257	194	37	17	7				1	
	Fem... 256	189	28	21	13			1	1		
	Unk... 2	2									
Ionia.....	Total..	470	380	21	38	28			3		
	Males..	238	189	16	21	11			1		
	Fem... 231	190	5	17	17			2			
	Unk... 1	1									
Iosco.....	Total..	236	47	124	39	22	1		2		
	Males..	116	24	60	18	12	1				
	Fem... 118	23	63	21	10		1		1		
	Unk... 2		1					1			
Iron.....	Total..	30	7	17	2	3	1				
	Males..	17	3	12	1	1					
	Fem... 13	4	5	1	2	1	1				
Isabella.....	Total..	386	247	71	37	29		1			
	Males..	201	131	35	18	16		1			
	Fem... 185	116	36	19	13						
Jackson.....	Total..	706	486	107	56	45	3	2	1		
	Males..	338	231	57	29	15	1		1		
	Fem... 368	253	50	27	30	2	2				
	Unk... 2	2									
Kalamazoo.....	Total..	591	322	111	47	33	1	4	1	4	
	Males..	318	182	61	26	20	1	1		3	
	Fem... 274	139	49	21	13		1	1	1		
	Unk... 19	1	1					2			
Kalkaska.....	Total..	95	56	11	16	5		1	2		
	Males..	45	28	4	8			1	2		
	Fem... 50	28	7	8	5						
Kent.....	Total..	2,282	886	905	276	146	4	1	11	3	5
	Males..	1,212	474	484	142	76	2	1	7	1	2
	Fem... 1,069	412	420	134	70	2	2	4	2	2	2
	Unk... 1		1								
Keweenaw.....	Total..	71	10	43	14	3				1	
	Males..	37	2	25	8	2					
	Fem... 33	8	17	6	1					1	
	Unk... 1		1								
Lake.....	Total..	123	62	34	18	6				1	
	Males..	65	33	16	11	2				1	
	Fem... 58	29	18	7	4						
Lapeer.....	Total..	389	239	41	61	45	2				
	Males..	199	124	20	31	22	1				
	Fem... 190	115	21	30	23	1	1				
Leelanau.....	Total..	242	113	57	41	29		1		1	
	Males..	119	55	31	19	13				1	
	Fem... 123	58	26	22	16		1				
Lenawee.....	Total..	565	452	37	41	23	2		2		
	Males..	281	224	20	21	11					
	Fem... 280	226	15	20	12	2	2		2		
	Unk... 4	2	2								
Livingston.....	Total..	257	214	9	23	11					
	Males..	130	112	4	9	5					
	Fem... 127	102	5	14	6						

TABLE II.—CONTINUED.—*Births by counties, parent nativity and sex, 1898.*

Counties.	Sex.	Children born, 1898.	Nativity of parents of children born, 1898.									
			Both native born.	Both foreign born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		Both Unk.	
							Father—		Mother—			
							Native.	Foreign.	Native.	Foreign.		
Luce.....	Total..	48	6	29	6	7						
	Males..	19	2	12	1	4						
	Fem...	29	4	17	5	3						
Mackinac.....	Total..	97	45	25	12	11			2	2		
	Males..	49	27	10	5	4			2	1		
	Fem...	47	18	15	7	6				1		
	Unk....	1				1						
Macomb.....	Total..	585	375	84	76	42	5		2	1		
	Males..	301	187	48	42	21	1		1	1		
	Fem...	284	188	36	34	21	4		1			
Manistee.....	Total..	740	202	405	80	41	1		4	3	4	
	Males..	384	118	193	43	24			2	1	3	
	Fem...	355	83	212	37	17	1		2	2	1	
	Unk....	1	1									
Marquette.....	Total..	1,301	167	862	188	68	1	3	4	5	3	
	Males..	716	87	480	103	36		2	4	3	1	
	Fem...	585	80	382	85	32	1	1		2	2	
Mason.....	Total..	400	161	166	48	20			2	2	1	
	Males..	186	78	79	17	10			1	1		
	Fem...	214	83	87	31	10			1	1	1	
Mecosta.....	Total..	289	172	56	44	10	1	1	4	1		
	Males..	163	87	35	26	9		1	4	1		
	Fem...	126	85	21	18	1	1					
Menominee.....	Total..	627	151	337	84	38	2	6	3	2	4	
	Males..	340	82	187	44	20	1	1	2	1	2	
	Fem...	286	69	149	40	18	1	5	1	1	2	
	Unk....	1		1								
Midland.....	Total..	238	127	49	30	31			1			
	Males..	105	57	21	12	14			1			
	Fem...	133	70	28	18	17						
Missaukee.....	Total..	216	73	76	46	15	1		4		1	
	Males..	118	42	38	28	8			1		1	
	Fem...	97	31	38	18	7	1		2		1	
	Unk....	1							1			
Monroe.....	Total..	617	523	35	30	23	1		2		3	
	Males..	348	290	22	17	15	1		1		2	
	Fem...	269	233	13	13	8			1		1	
Montcalm.....	Total..	478	318	72	46	33			4	1	4	
	Males..	242	166	32	20	17			4		3	
	Fem...	236	152	40	26	16				1	1	
Montmorency.....	Total..	30	7	11	8	3			1			
	Males..	17	3	5	6	2			1			
	Fem...	13	4	6	2	1						
Muskegon.....	Total..	586	239	232	63	44			4	2	2	
	Males..	283	109	118	31	21			1	2	1	
	Fem...	302	129	114	32	23			3		1	
	Unk....	1	1								1	
Newaygo.....	Total..	205	143	27	19	13	1		2			
	Males..	106	72	14	13	6			1			
	Fem...	99	71	13	6	7	1		1			
Oakland.....	Total..	465	328	53	43	40	1					
	Males..	247	177	31	18	20	1					
	Fem...	218	151	22	25	20						

TABLE II.—CONTINUED.—*Births by counties, parent nativity and sex, 1898.*

Counties.	Sex.	Children born, 1898.	Nativity of parents of children born in 1898.								Both Unk.
			Both native born.	Both foreign born.	Foreign father and native mother.	Foreign mother and native father.	Mother unknown.		Father unknown.		
							Father—		Mother—		
							Native.	Foreign.	Native.	Foreign.	
Oceana	Total Males Fem.	318 166 152	213 109 104	40 20 20	34 21 13	23 13 10	4 3 1	1 1	3 3		
Ogemaw	Total Males Fem.	95 49 46	37 15 22	36 20 16	13 6 7	8 7 1					
Ontonagon	Total Males Fem.	37 20 17	14 7 7	3 3 —	4 1 3	2 2 —	1 1	2 2 —		11 5 6	
Osceola	Total Males Fem. Unk.	340 174 165 1	171 78 93 —	67 40 26 1	60 30 30 1	42 28 16 —					
Oscoda	Total Males Fem.	13 8 5	9 5 4	1 1 —	— 1 —	2 1 1					
Otsego	Total Males Fem. Unk.	97 45 51 1	28 14 14 —	37 19 18 —	20 6 14 —	11 6 5 —					
Ottawa	Total Males Fem. Unk.	850 427 417 6	401 208 189 4	232 120 112 —	119 58 59 2	86 39 47 —	1 1 —	2 1 1 —	3 3 —		
Presque Isle	Total Males Fem.	136 65 71	25 9 16	75 35 40	20 11 9	11 7 4	1 — 1	2 2 —	1 1 —	1 1	
Roscommon	Total Males Fem.	29 15 5	9 7 2	1 — 1	1 1 —	2 2 —	4 3 1	1 1 —		2 1 1	
Saginaw	Total Males Fem.	1,711 896 815	763 409 354	450 229 221	264 137 127	182 91 91	1 1 —	1 — 1	17 8 9	6 2 4	
Sanilac	Total Males Fem.	686 361 325	198 110 88	236 116 120	151 81 70	90 46 44			6 4 2	4 4 —	
Schoolcraft	Total Males Fem.	187 81 106	34 14 20	104 48 56	26 11 15	18 7 11	1 — 1		2 1 1	1 1	
Shiawassee	Total Males Fem. Unk.	374 192 180 2	283 143 139 1	23 11 11 1	36 23 13 —	30 15 15 —		1 1 —	1 1 —		
St. Clair	Total Males Fem. Unk.	808 433 367 3	420 229 189 2	147 81 66 —	115 61 53 1	113 56 57 —			3 2 1 —	3 3 1 —	
St. Joseph	Total Males Fem.	314 156 158	254 134 120	27 9 18	22 10 12	8 2 6	2 2	1 1			
Tuscola	Total Males Fem.	578 303 275	331 168 163	87 52 35	81 46 35	70 33 37	3 2 1	1 1 —	5 4		

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TABLE II.—CONCLUDED.—Births by counties, parent nativity and sex, 1898.

[illegible]

TABLE III.—Stillbirths, twins and illegitimate births in Michigan, by counties, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)

State and counties.	Number of stillbirths in 1898.	Number of twins born in 1898.	Number of illegitimate children born in 1898.	Counties.	Number of stillbirths in 1898.	Number of twins born in 1898.	Number of illegitimate children born in 1898.
STATE.....	552	882	537	Kent.....	37	54	50
				Keweenaw.....	4	2	1
				Lake.....	2	8	2
				Lapeer.....	3	4	1
				Leelanau.....	7	18	3
Alcona.....	3	2	1	Lenawee.....	7	4	2
Alger.....	3	6	2	Livingston.....	7	1	2
Allegan.....	11	4	3	Luce.....	1	1	2
Alpena.....	3	8	3	Mackinac.....	1	12	3
Antrim.....	6	3	2	Macomb.....	3	24	4
				Manistee.....	14	30	8
Arenac.....	2	10	5	Marquette.....	33	7	2
Baraga.....	1	26	1	Mason.....	7	6	1
Barry.....	7	4	3	Mecosta.....	3	8	1
Bay.....	7	10	3	Menominee.....	24	8	1
Benzie.....	4	10	2	Midland.....		8	
				Missaukee.....	4	2	3
Berrien.....	7	10	3	Monroe.....	7	10	2
Branch.....	4	10	2	Montcalm.....	7	14	5
Calhoun.....	7	2	3	Montmorency.....			1
Cass.....	4	12	1	Muskegon.....	13	10	2
Charlevoix.....	2	4	1	Newaygo.....	3		
				Oakland.....		6	2
Cheboygan.....	1	4	5	Oceana.....	2	4	
Chippewa.....	5	2	3	Ogemaw.....			2
Clare.....	2	4	3	Ontonagon.....			2
Clinton.....	5	14	3	Osceola.....	9	14	1
Crawford.....	2		1	Oscoda.....			
				Otsego.....	1		
Delta.....	1	8	3	Ottawa.....	9	16	3
Dickinson.....	7	12	1	Presque Isle.....			1
Eaton.....	2	6	3	Roscommon.....			
Emmet.....	2	2	3	Saginaw.....	25	42	11
Genesee.....	3	8	3	Sanilac.....	12	18	10
				Schoolcraft.....	7	12	2
Gladwin.....	3	6	1	Shiawassee.....	12		1
Gogebic.....	7	2	1	St. Clair.....	22	24	3
Grand Traverse.....		4	1	St. Joseph.....	4	12	1
Gratiot.....	5	8	1	Tuscola.....	7	18	4
Hillsdale.....		4	1	Van Buren.....	9	12	1
Houghton.....	13	42	12	Washtenaw.....		6	1
Huron.....	12	10	2	Wayne.....	77	168	320
Ingham.....	5	10	4	Wexford.....	4	12	
Ionia.....	8	10	3				
Iosco.....	9	2	2				
Iron.....							
Isabella.....	3	10	1				
Jackson.....	8	16	7				
Kalamazoo.....	5	10	7				
Kalkaska.....							

TRIPLETS.—There were six cases of triplets reported for 1898, as follows: Baraga county, born in December, 1 male, 2 females, parents both foreign; Clinton county, born in February, 1 male, 2 females, parents both native; Houghton county, born in November, males, parents both foreign; Lenawee county, born in September, 1 male, 2 females, parents both native; Osceola county, born in November, males, stillborn, parents both native; Wayne county, born in February, 1 male, 2 females, foreign father, native mother.

BIRTHS

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TABLE IV.—Stillbirths, twins and illegitimate births in Michigan, by months and sex, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)

Condition.	Sex.	Year 1898.	Months of birth, 1898.												
			Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Unk.
Stillbirths...	Total	552	32	40	56	53	52	39	44	39	47	51	42	55	2
	Males	296	21	21	33	28	24	21	25	23	25	23	24	28	—
	Fem...	218	10	19	17	19	27	14	15	13	21	24	13	24	2
	Unk...	38	1	—	6	6	1	4	4	3	1	4	5	3	—
Twins	Total	882	42	58	94	76	116	74	84	76	58	76	66	62	—
	Males	479	26	37	43	42	62	36	39	37	30	43	43	41	—
	Fem...	398	16	21	48	34	54	36	45	39	28	33	23	21	—
	Unk...	5	—	—	3	—	—	2	—	—	—	—	—	—	—
Illegitimates	Total	537	53	49	47	59	50	43	42	35	36	54	32	45	1
	Males	281	24	31	21	26	23	21	25	23	20	26	15	26	—
	Fem...	254	29	18	26	24	27	21	16	12	16	28	17	19	1
	Unk...	2	—	—	—	—	—	1	1	—	—	—	—	—	—

TABLE V.—Stillbirths, twins and illegitimate births in Michigan, by nativity of parents, as enumerated by supervisors and assessors for the year 1898. (Stillbirths included.)

Nativity of parents.	Number of stillborn children, 1898.				Number of twins, 1898.				Number of illegitimate children, 1898.			
	Total.	Males.	Fem.	Unk.	Total.	Males.	Fem.	Unk.	Total.	Males.	Fem.	Unk.
All nativities.....	552	296	218	38	882	479	398	5	537	281	254	2
Both native born.....	235	113	106	16	408	212	193	3	39	16	23	—
Both foreign born.....	190	112	69	9	294	166	128	—	12	5	7	—
Foreign father and native mother..	61	36	19	6	100	63	35	2	10	5	5	—
Foreign mother and native father..	45	26	16	3	62	25	37	—	4	4	—	—
Unknown mother, father native...	1	1	—	—	2	2	—	—	3	1	2	—
Unknown mother, father foreign..	—	—	—	—	2	2	—	—	3	2	1	—
Unknown father, mother native...	6	2	2	2	4	4	—	—	130	68	60	2
Unknown father, mother foreign..	3	1	2	—	4	3	1	—	71	39	32	—
Both unknown.....	11	5	4	2	6	2	4	—	265	141	124	—
One or both native.....	348	178	143	27	576	306	265	5	186	94	90	2
One or both foreign.....	299	175	106	18	462	259	201	2	100	55	45	—

ESTIMATES OF POPULATION AS REVISED BY CENSUS OF 1900.

The population of Michigan in 1900 was 2,419,782* persons. This represents an increase of only 15.6 per cent over the population of 1890, and as may be seen by referring to page xxv, is far below what we should have expected the decennial percentage of increase to be. While there has been a constantly decreasing decennial per cent of increase, no previous decade has ever fallen off nearly fifty per cent in this respect. Ever since 1860, also, the net amount of increase of population in ten years has not been far from 450,000 persons. From 1890 to 1900 it was only 325,893.

Despite the great variation in the conditions of growth of the State during the past ten years, the contention of the text of the report, as based on the study of previous censuses, still holds good. As a method of estimation, the arithmetical method has again proved its superiority to the geometrical system, although the results by both methods were not as close to the results of the census enumeration as they probably would have been if the growth of the State had been more uniform. This comparison may be made by means of Table 2 on page xxii, in which it will be seen that the estimated population of the State by the arithmetical method for 1900 was 2,463,269, an excess of 43,487 over the enumeration, while the geometrical estimate was 2,483,100, an excess of 63,318; thus the former is closer by about 20,000. Still closer is the combination of the method of natural increase and the geometrical method, which is only 32,784 in excess.

Now the question arises, how does the excess of the estimated populations employed in this report over the results of enumeration affect the validity of the rates thereon computed? Practically not at all. Of course the rates based upon the estimated populations would be a little too low, since the estimates were a little too high, but the amount of the difference is not sufficient to materially affect the calculations.

Thus in Table 3, p. xxviii, if we substitute for the estimated populations there given from 1895 to 1898 (the estimates are only for the postcensal years) the revised intercensal estimates, we shall find that the death rate for 1898, the last and most divergent year of the series, is only 12.5 as compared with the previous statement of 12.4. For the years 1895, 1896 and 1897 the differences would be even less, while for the years 1899 and 1900, as used only in the monthly rates of the *Bulletin*, the differences would be somewhat more, but in no case exceeding 0.2 or 0.3 per 1,000 estimated population (0.02 or 0.03 per cent). The conclusion is that any of the approved methods of estimating population is fairly reliable and far superior to the total rejection of all methods of estimation.

For the year 1898, moreover, the relative rates, although subject to a slight percentage of increase for comparison with other years, are perfectly comparable among themselves without change, and, indeed, the factor of correction is well within the limitations of accuracy of such statistics.

*The latest statement is 2,420,982, or 1,200 more than the figures given above. As the change is immaterial and only adds strength to the following argument, the text of this note is left unchanged.

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APPENDIX

THE

BERTILLON CLASSIFICATION

OF

CAUSES OF DEATH

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NOTE.—This Appendix, with the above contents, is substantially a reprint of the pamphlet entitled "The Bertillon Classification of Causes of Death, recommended for the use of Registrars of Vital Statistics (after the First Revision of Paris, 1900) by the American Public Health Association and by the Conference of State and Provincial Boards of Health of North America," and issued in 1899 under the auspices of the American Public Health Association. It only differs in the substitution of some more recent information in regard to the progress of the classification (p. 37) and in the omission of the suggestions for aiding in the work of revision. The practical application of this classification to the statistics of Michigan may be seen in Table III, p. 20, Table IV, p. 40, and Table VII, p. 78, of the body of this Report. Some slight changes, principally condensations of titles of slight importance, have been employed, but in such a manner that the comparability of the statistics with those of other states or countries using the full classification will be in no wise impaired. This classification has also been observed in the MICHIGAN MONTHLY BULLETIN OF VITAL STATISTICS, beginning with January, 1899. The relative importance of the titles, as applied to the statistics of Michigan, may be seen in Table 19, p. lxxiv, and in Table 20, p. lxxvi, may be found a condensed form of the classification which is much more convenient for some purposes than the extended form, and which represents the system more fairly than the official abridgements.

THE BERTILLON CLASSIFICATION OF CAUSES OF DEATH.

PREFATORY.

It is with unfeigned pleasure that the Committee on Demography and Statistics in their Sanitary Relations presents this pamphlet on the Bertillon classification of causes of death to the American Public Health Association, and to the official registrars, sanitarians, pathologists, statisticians, and all persons interested in the collection, compilation and practical use of mortality statistics in the three countries embraced in the Association—Canada, Mexico and the United States. Indeed, it will be gratifying to the Committee and to the Association alike if it may be found of even wider usefulness than if confined within the limits of membership of the Association, and it is hoped that it may serve, to some extent, as a means of cementing that world-wide union of registration workers, without which the fullest and best use of international mortality statistics will not be possible.

The time is especially suitable for the general adoption of a uniform classification of causes of death, to the end that the mortality data of the coming century may be more thoroughly comparable than at present. The occasion of the assembly of the public-health workers and vital statisticians of the world at the International Congress of Hygiene and Demography to be held in Paris at the time of the International Exposition in 1900 will afford special facilities for the work of the First International Revision, after the completion of which, and not until then, the classification will be recommended for the practical use of registration offices. There will be only a short interval of delay, as the results of the revision will undoubtedly be ready for use before the end of the year 1900, and in time to begin the compilation of the statistics for the first year of the next century, 1901, thereunder. Indeed, the annual reports for the year 1900 may be so compiled when the work is not begun until after the close of the year, as in some offices.

The Bertillon classification is not presented as by any means a perfect system of classification of causes of death. No perfect system has ever been devised, and should there be, the progress of medical science would in time render it obsolete. As it stands, however, it is believed to be a fairly good working classification, with probably as few serious faults, on the whole, as any other that could be suggested, and a regular system of periodical revision has been adopted whereby the classification can be kept up to date, and also by which the needs of the registration offices of all the countries entering into the revision can be met. It consists of a thoroughly representative method of revision by the practical registration officials, with the advice and help of all students of vital statistics who may be willing to lend their assistance.

It will be understood that the translation of the latest version of the classification (*Extrait de l'Annuaire statistique de la Ville de Paris pour l'année 1896; De la nomenclature des maladies, etc., Paris, Imprimerie municipale, 1898*) is intended to be as nearly as possible a merely literal one, and that the Committee has neither ventured to modify the

inclusion of any of the titles to correspond to its present views or to admit any common English synonyms of diseases, however certain their position. This will probably come among the labors of the Commission of Revision, to whom the suggestions of the individual members of the Committee will be submitted in the regular way provided for in the Plan of Revision (see page 34).

The most important object to be gained by the adoption of a uniform classification of causes of death is not the mere formal arrangement of the titles employed or the identity of the various groups or classes of diseases. These features are of very minor importance as compared with the precise meaning and comparability of the individual terms composing the tabular list of diseases. It might be supposed that there would be no difficulty in preserving an agreement as to the inclusion of these terms, but in practice this is found to be a very difficult matter. The classification is not intended primarily for the use of physicians in reporting causes of death upon certificates of death. It is not desirable that they should report all deaths under some title of the list. It is only necessary that they should make a precise statement of the cause of death, using any accepted medical terminology for the same, and the translation into the formal list of the statistical table then becomes a matter pertaining to the work of the registration office. This condensation of the multitude of terms describing causes of death, as reported by physicians, into a comparatively short tabular list, such as it is practicable to print in a mortality report, should be governed by the most precise rules, and should be conducted with absolute precision; otherwise terms apparently precisely the same, as used in different countries, states or cities, will in reality have quite different inclusions. The adoption of the Bertillon system affords a precise basis for fixing the inclusion of the terms employed (see pages 18 to 33), and the provisions for revising the classification preliminary to its general adoption with the beginning of the next century (1901), with the co-operation of all registration offices desiring to use the system, and with the advice of all persons interested in mortality statistics, will enable the meaning of the terms to be settled in accordance with the wishes of the largest numbers.

In presenting this report, which practically concludes, so far as the Committee is concerned, their labor on this very important subject of a uniform classification of causes of death, the Committee desires to express its sincere appreciation of the interest felt in this subject, and the facilities placed at its disposition for use in connection with its work thereon, by the Executive Committee and the officers of the Association, for some years past, and to join with the warmest sympathy with the members of the Association and with all of the sanitary workers of the country in sorrow for the recent death of our lamented President, Dr. GEORGE H. ROHÉ. May the success of this movement for uniform mortality statistics, which he held much at heart, and upon which the final action was taken by the Association during his presidency, serve as one more token to keep his genial presence before the minds and warm in the recollections of the sanitarians of the country, whom he had served so actively and so effectively in many ways.

Respectfully submitted,

*The Committee on Demography and Statistics in their
Sanitary Relations.*

CRESSY L. WILBUR, *Lansing, Michigan.*

H. M. BRACKEN, *St. Paul, Minnesota.*

CHAS. V. CHAPIN, *Providence, Rhode Island.*

A. G. YOUNG, *Augusta, Maine.*

JOHN S. FULTON, *Baltimore, Maryland.*

**RESOLUTIONS ADOPTED BY THE AMERICAN PUBLIC HEALTH
ASSOCIATION RELATIVE TO THE BERTILLON CLASSI-
FICATION OF CAUSES OF DEATH.**

At a meeting of the American Public Health Association, held in Philadelphia, Pa., October 26-29, 1897, the following resolutions were introduced by the Committee on Nomenclature of Diseases and Forms of Statistics (now the Committee on Demography and Statistics in their Sanitary Relations) and were referred to the Executive Committee:

Resolved, That the American Public Health Association recommends that the Bertillon classification of causes of death be adopted by all the registrars of vital statistics in the United States, Canada and Mexico, as soon as the change from the systems now in use can be conveniently made.

Resolved, That the Committee on Nomenclature of Diseases and Forms of Statistics be authorized to have printed and circulated among the registrars of the three countries a circular containing these resolutions, the report of the committee on which it is based, the three alternative forms of the Bertillon classification, with explanatory notes on inclusion of terms and practical rules for compilation, and a list of the registration offices adopting the same.

Resolved, That a proposal be made for an international alliance between the registrars of the three countries included in this Association, and the registrars of France and other countries now using, or which shall hereafter adopt, the Bertillon system, and that definite plans for such an alliance shall be submitted for action to the next annual meeting of this Association.

Resolved, That the governments of the United States, Mexico and Canada be likewise requested to make this classification the basis of the mortality statistics of the censuses of 1900 and 1901.

At a meeting of the Association held in Ottawa, Canada, September 27-30, 1898, the resolutions were adopted, as were also the following resolutions introduced by the same committee:

Resolved, That the American Public Health Association approves the general principles and plan of procedure relative to the periodical revision of the Bertillon classification of causes of death as submitted by the Committee on Demography and Statistics in their Sanitary Relations.

Resolved, That Commissions of three members be appointed by the President of the American Public Health Association at this meeting, subject to the approval of the Executive Committee, from each of the countries represented in the Association, to act jointly with each other and with similar commissions from other countries in the revision of the Bertillon classification of causes of death; and that said commission shall be authorized to adopt such necessary rules, in conjunction with other countries associated in the work of revision, as shall be necessary for its successful conduct; they shall report progress to this Association at each annual meeting, and shall be continued until the work of revision is completed and their successors selected for the next periodical revision.

Commissioners were appointed under the above resolutions as follows:

Canada.....	{ Dr. Emmanuel P. Lachapelle, Montreal, P. Q.
	{ Dr. Peter H. Bryce, Toronto, Ont.
	{ Dr. Elzéar Pelletier, <i>Secretary</i> , Montreal, P. Q.
Mexico.....	{ Dr. Eduardo Licéaga, Mexico, Mexico.
	{ Dr. Jesus E. Monjarás, San Luis Potosí, Mexico.
	{ Dr. José Ramirez, <i>Secretary</i> , Mexico, Mexico.
United States.....	{ Dr. Samuel W. Abbott, Boston, Mass.
	{ Dr. A. G. Young, Augusta, Me.
	{ Dr. Cressy L. Wilbur, <i>Secretary</i> , Lansing, Mich.

Attest: C. O. PROBST,
Secretary.

GEORGE H. ROHÉ,
President.

REPORT OF THE COMMITTEE ON THE NOMENCLATURE OF DISEASES AND FORMS OF STATISTICS.

Mr. President and Members of the American Public Health Association: Your committee desires, first of all, to express its sincere regret that the multiplicity of other duties has made compulsory the resignation of its former able Chairman, Dr. Samuel W. Abbott, of Massachusetts, and to hope that his experienced counsel will still be available, so far as his other engagements may permit, in the service of this committee while discharging its duties to the Association. The principal recommendations of this report, it may be said at the outset, especially those relating to the adoption of a standard system of nomenclature, are made possible by the labors of this Committee under Dr. Abbott's direction in recent years.

The time has come when it would seem desirable that this Association should pronounce definitely in favor of a standard classification of causes of death for use in the compilation of statistical reports. The Bertillon system, reported to the International Statistical Institute at Chicago in 1893, seems to have better prospects of general adoption at this time by registrars generally in the three countries represented in this Association than any other, and therefore this Committee submits as its chief recommendation for action by the Association at the present session that the Bertillon classification be declared the choice of the American Public Health Association.

The classification was printed in full in Vol. XX of *Public Health*,* so that it is unnecessary to discuss it in detail at this time. It has already been put into practical use by the governments of Mexico and of the Province of Quebec in their reports, and several states of the United States will undoubtedly accept it when indorsed by the Association. Among those ready for the immediate adoption† of a modern nomenclature are Massachusetts, Michigan, Ohio and Vermont; while all of the states included in the New England Registrars' Association will, it is hoped, conform. Besides the longer classification printed in the volume of *Public Health* referred to above, there is a shorter and an intermediate classification, each comparable with the longer one, so that the needs of cities and of monthly reports from States, requiring less statistical detail, are fully provided for. It is especially desirable that the municipal reports adopt the same classification as those used by the State systems, and it is very fortunate that, owing largely to the efforts of Dr. Heckard, Registrar of Vital Statistics of Chicago, we have a large attendance of municipal registrars at this meeting of the Association for the purpose of obtaining greater uniformity in classification.

It is not maintained that the Bertillon system is entirely perfect, nor that it may not properly be subject to revision after a reasonable time. It is believed, however, that its adoption in its present condition will afford a working basis of uniformity, and lead to general improvement along the best lines. Much energy is dissipated, and many valuable suggestions come to naught, from the utter absence of co-ordination. Working together, with a broad basis of agreement, many improvements will be made by the associated registrars and come into general use that would not be possible if each state and city continues its development along individual lines.

One of the principal advantages to be derived from the general adoption of the same formal classification of causes of death will be the possibility of reaching a

* *Public Health: Reports and Papers of the American Public Health Association, 1894.*

† By immediate adoption is meant adoption as soon as the course of compilation of the registration report will conveniently permit.

better agreement on the inclusion of the terms employed, as related to the original returns. It is obvious that in even the most extended classification in ordinary use, there is considerable condensation or "consolidation," as the term is technically employed, from the statements made in the certificates of death. This is well known to all who have been engaged in practical registration work, but is less obvious to physicians and others accustomed to accept implicitly the statistics as finally printed in the reports. Sometimes considerable discrepancies may arise from varying methods of compilation, and the necessity of a uniform code of rules for compilation can only be met by associated action.

Among the practical questions to be settled in connection with the adoption of a standard classification is the treatment of stillbirths. They are not included in the Bertillon classification as used in France, nor is it generally customary to state them among causes of death in the English classification. Nevertheless, both Quebec and Mexico, in their adoption of the Bertillon system, have so far changed it as to include stillbirths in the regular list of causes of death, thus rendering a correction necessary before comparison with the standard form of the classification. It is recommended that stillbirths be separately stated from other deaths, and that, in case it is considered necessary to include them in the classification, they be stated in connection with total deaths, so that errors from inclusion or non-inclusion of the same can be avoided in comparing reports of different counties. Premature births, living an appreciable time after birth, are not stillbirths, and are contained in No. 138 of the list, "Congenital debility, jaundice and sclerema." Here also may be placed deaths of infants occurring a few days (less than three) after birth without assigned cause of death, whose inclusion under a separate caption was proposed at the last meeting of this Association. It will entirely defeat the object of the adoption of a *uniform* classification if each registration office introduces its peculiar modifications of the original classification.

Probably the most efficient method of carrying out the purpose of this Association, should it authorize an effort at this time to secure practical uniformity in the classification of causes of death, is the preparation of a Circular containing the three alternative systems of classification presented by Dr. Bertillon to the Statistical Institute, with the recommendations of this Committee and of this Association, and the indorsements of as many State and municipal registrars as may be able immediately to promise the adoption of the system in their work. This circular should be distributed among the registrars of the three countries. A set of working rules to secure uniformity in the practical work of compilation should accompany the same. It would be very gratifying if this proposed action should lead to a fuller representation of the official registrars at the annual meetings of this Association, with, perhaps, a formal organization for the discussion of questions of vital statistics and the settlement of practical details of registration. They might well meet as a section of the general body.

There are many States wherein efficient registration of deaths will be impossible for many years to come on account of the great sparseness of population. The sanitary authorities in such States should not be deprived of the benefit of reliable vital statistics, so far as the General Government can reasonably undertake to supply the want. At every United States census since 1850, vital statistics have been collected for such States in this country, but the results, under the discredited method of enumeration, have been imperfect and even misleading in many cases. It is possible to obtain accurate vital statistics of representative areas in all of the non-registration States of this country, which, while not wholly exhaustive, will be invaluable for many important sanitary and sociological uses. The collection of useful vital statistics by the United States Census necessarily implies a permanent organization, such data requiring continuous collection from year to year. This Committee earnestly

recommends that the Association exert its influence for the passage of a law by the approaching session of Congress to provide for a permanent census organization, and as an especially important feature of such a law, having a direct bearing upon successful public health work, to provide for the continuous collection of vital statistics in representative areas of non-registration States during intercensal years.

Under the head of forms of statistics, it may be said that the adoption of a standard classification of causes of death, as recommended in the preceding part of this report, will pave the way for many reforms of value in our methods of presenting vital data. It is especially urged that greater attention be paid to establishing a suitable basis of population in the statement of death rates from the common infectious diseases, such as diphtheria, scarlet fever, and others, whose chief incidence is upon a special age class of the population. Rates, as a rule, should be based only upon susceptible population. Similar precautions are necessary in the statement of death rates from all causes, a difficulty which the system of mortality indices, devised by Körösi and adopted by the International Statistical Institute, has been employed to obviate. It is not expedient to enter into the discussion of these subjects in the present report, whose chief object has been to suggest measures whereby the general condition of the collection of vital statistics could be improved, and data of fundamental importance be rendered comparable. Greater exactness and refinement of methods will properly come later on.

Respectfully submitted,

CRESSY L. WILBUR, *Michigan.*

JESUS E. MONJARÁS, *San Luis Potosi, Mexico.*

ELZÉAR PELLETIER, *Province of Quebec.*

A. G. YOUNG, *Maine.*

RICHARD H. LEWIS, *North Carolina.*

ABSTRACT OF DR. J. BERTILLON'S REPORT UPON NOMENCLATURE
OF DISEASES AND CAUSES OF DEATH TO THE INTER-
NATIONAL STATISTICAL INSTITUTE AT CHICAGO, 1893.

The International Statistical Institute, at its session of October 2, 1891, at Vienna, entrusted to us the duty of preparing for the next session a nomenclature of the causes of death. One of the authors of this proposition (Dr. Guillaume) expressed the wish (which he did not think necessary to incorporate in the report which was adopted) that two or three plans should be presented, one of which should be a *résumé* or condensed form of the others, so that each authority might choose a nomenclature more or less condensed without sacrificing exactness of international comparisons. The subject is by no means new.

Already, in 1853, the Statistical Congress at Brussels had decided that it was advisable to "formulate a uniform nomenclature of the causes of death" and had authorized D'Espine of Geneva and Dr. Farr to present a plan of nomenclature at the next congress. In 1855 each of these two distinguished physicians reported plans founded upon very different principles.

In the committee where these two systems of nomenclature were discussed, the president, M. Rayer, called attention to the fact that the classification of diseases was a matter of secondary importance, and that the main point was to prepare a list of separate diseases (*unités morbides*) which were of sufficiently frequent occurrence to merit the attention of the statistician, so that the summary of the causes of death when tabulated by separate diseases or units should always render the comparison of data possible.

It was, therefore, from this judicious point of view that the list drawn up in this manner was presented for the approval of the congress. This list was translated into English by Dr. Farr, into German by M. Virchow, into Italian by M. Bertini, and into Swedish by M. Berg.

The single diseases defined by the congress of 1855 still exist in almost all systems of nomenclature, but do not follow the classification adopted by the congress. We find that the committee, with good reason, attached but little importance to this classification. Today, as well as in 1855, the nature of diseases is to little understood for us to attempt to decide upon a natural classification of diseases. If we pretend to do this, the progress of medical science would completely upset our work, to the great injury of statistics, to which uniformity and continuity are very essential conditions.

Must it then be said that classification is of no use, and that we must be contented with a mere alphabetical list? No, an alphabetical order is an extremely faulty method of classification, and of little practical use, since the greater part of diseases have many names; the reader being unable to tell whether *dothineritis*, for example, has been entered under the name of typhoid fever or mucous fever, or of continued fever, etc., would be obliged to read through the entire list in order to find the term. A classification by analogy, therefore, while very defective, is still preferable to an alphabetical list.

Most of the nomenclatures now in use are derived more or less directly from that of Dr. Farr, in which diseases are classed, for the most part, according to their anatomical seat, and not according to their nature. This is evidently right, since the progress of science constantly modifies the opinions of physicians as to the nature of diseases, and consequently a statistical nomenclature should be modified with the least possible frequency in order to admit of comparison with those of earlier date.

The diseases of each system of organs are grouped together; for example, the nervous system, the circulatory, the respiratory, the digestive, the genito-urinary, the affections of the skin, and those of the organs of locomotion (the bones, joints, muscles).

Besides these diseases, the seat of which is known, there are others which involve the whole organism; formerly these general diseases were separated into several subdivisions, which today are out of date. It is better to group these diseases together, placing at the head of the list those to which Dr. Farr gave the fortunate title of "zymotic;" then those which are termed "virulent;" finally, other general diseases and slow poisons. But it would doubtless be a mistake to make these distinctions in a new nomenclature, since we can today foresee that they will soon lose the importance which was once attached to them. For example, at the present day the list of diseases called infectious includes additional diseases which were once classed under other titles. It is better, then, to avoid these classifications which are necessary only provisional, and are also useless for statistical purposes.

As many of the speakers at the statistical congress at Paris, and other distinguished authorities have said, the important point in medical statistics consists in the presentation of the relative figures for a certain number of definite diseases. With the same intent, the authors of the Italian nomenclature have omitted all the titles of general groups. However much we may approve the motive which actuated them, we maintain some of the general titles for the sake of facilitating scientific research.

The preceding statement explains why, in the compilation of the abridged nomenclatures, we were not concerned about general titles covering a group of diseases. We believe that, in the present state of medical science, we should not attempt to establish a definite grouping of diseases. What significance can be attached today to the terms "enthetic, dietic, diathetic" diseases which Dr. Farr proposed for the adoption of the statistical congress of 1855? They have lost all their meaning, and a statistical system which informs us today, for example, how many persons died of "diathetic diseases" conveys but little meaning. But if the name of the group or subdivision has lost its meaning, the name of the separate disease still preserves its significance; for example, this group of diseases, the "diathetic," was made up of gout, anemia, cancer, and senile gangrene. These diseases which seem to us today so grotesquely associated, when considered separately, still preserve very definitely the meaning which they had in 1855.

The history of the past should be our light in the future. Those disease groups which once seemed most natural have rapidly lost their alleged value. We cannot, then, employ them in medical statistics if we aim at permanent work. On the contrary, the meaning of separate diseases changes much more slowly.

It is for this reason, then, that when we compile abbreviated nomenclatures, we shall not attempt to bring together (under a generic term) several diseases which seem to us to be related to one another since we may fear that in a very few years this grouping may become artificial and out of accord with the progress of medical science. It appears much preferable for us to retain, in an abridged nomenclature, those definite diseases which are most worthy of study, partly on account of their transmissible nature and especially on account of their frequency.

RULES TO BE OBSERVED IN DOUBTFUL CASES.

The following are the general rules which we have adopted for the solution of certain difficulties (most frequently caused by incomplete diagnosis, notably in the hospitals):

I. Incomplete Diagnosis.

1. It is not the duty of a statistical office to interpret diagnosis (that is to say, to guess at what has been left incomplete). It can only register facts as they are formulated.

2. When an organ affected with disease is not specified, the certificate should be entered under the title "other organs."

Example.—If the physician writes as cause of death "cancer," without specifying the organ attacked, the certificate should be classed under the title of "cancer of other organs" (25 G).

3. An operation upon an organ (without specification of the cause which has necessitated the operation) leads us to suppose that the organ was diseased. Consequently, for lack of better information, a certificate in which the only cause of death noted is an operation upon an organ, should be recorded under the title "other diseases of this organ."

Example.—Hysterotomy, given as a cause of death without other and more definite information implies a diseased uterus. Hence the certificate which conveys this information should be classed under the title "other diseases of the uterus" (112).

II. Doubtful Diagnosis.

1. In doubtful cases, greater importance is attached to the seat of the disease than to its nature.

Example.—For "abscess of the prostate" there is no special title: it should be classed under "diseases of the prostate" (104) and not under "abscess" (128).

2. The presence of a foreign body in an organ should be considered as a disease of that organ.

Example.—A foreign body in the bladder given as a cause of death should be classed under the title "diseases of the bladder" (102). Nevertheless, a foreign body in the larynx or in the "trachea" is to be considered as a cause of death by violence, and should be classed under that title (152).

III. Choice Between Two Simultaneous Diagnoses.

Another question remains to be decided. It very often happens that two diseases are named at the same time as the causes of death; to which of these causes should the deaths be attributed? The following rules are presented to solve this question:

1. When death is attributed simultaneously to two diseases, it should first be ascertained whether one is not a complication. If this is found to be the case, then the death must be classified under the primary cause.

Examples.—Measles and convulsions, compile as measles; measles and broncho-pneumonia compile as measles; scarlet fever and diphtheria, compile as scarlet fever; scarlet fever and nephritis compile as scarlet fever; scarlet fever and eclampsia, compile as scarlet fever; diabetes and bronchitis, compile as diabetes; typhoid fever and pulmonary congestion, compile as typhoid fever; whooping cough and pneumonia, compile as whooping cough; cerebral hemorrhage and hemiplegia compile as cerebral hemorrhage; felon and purulent infection, compile as felon.

2. If it is not absolutely certain (as in the preceding cases) that one of these diseases is the result of the other, the question should be settled whether there is not a considerable difference in the severity of the two diseases, and then the death should be recorded under the title of the more dangerous disease.

Example.—Cirrhosis and fracture of the leg. One of these diseases [causes of death] is not the cause of the other. Cirrhosis being fatal, and fracture of the leg only exceptionally so, the death should be recorded as cirrhosis. A still more puzzling example: measles and phthisis. There is no proof that measles has been the cause of a given case of phthisis (although it may have hastened its progress). Phthisis being a more severe disease than measles, the death should be recorded under the title "phthisis." This second example shows that the rule occasions some difficulties. The following suggestions may be adopted in certain doubtful cases: Deaths recorded as from measles and diphtheria, compile as diphtheria; measles and smallpox, compile as smallpox; measles and whooping cough, compile as measles; apoplexy and senile debility, compile as apoplexy; heart disease and softening of the brain, compile as heart disease; cancer and pulmonary phthisis, compile as cancer.

3. If the two causes of death are equally fatal, and neither appears to be caused by the other, the death should be recorded under that title which describes the case with the greatest accuracy. Generally it is the more rare disease, and this is the name which the physician usually writes first.

Example.—Diabetes and tuberculosis, compile under diabetes.

THREE NOMENCLATURES OF DISEASES.

(Causes of Death.—Causes of Incapacity for Labor.)

FIRST NOMENCLATURE.	SECOND NOMENCLATURE.	THIRD NOMENCLATURE.
	I. General Diseases.	I. General Diseases.
1. Typhoid fever.	1. Typhoid fever.	1. Typhoid fever.
2. Smallpox.	2. Smallpox.	2. Typhus.
3. Measles.	3. Measles.	3. Scurvy.
4. Scarlet fever.	4. Scarlet fever.	4. Smallpox.
5. Whooping cough.	5. Whooping cough.	5. Measles.
6. Diphtheria and croup.	6. Diphtheria and croup.	6. Scarlet fever.
	7. Influenza.	7. Whooping cough.
7. Asiatic cholera.	8. Miliary fever.	8. Diphtheria and croup.
8. Other epidemic diseases.	9. Asiatic cholera.	9. Influenza.
	10. Cholera nostras.	10. Miliary fever.
	11. Other epidemic diseases.	11. Asiatic cholera.
		12. Cholera nostras.
	12. Pyemia and septicemia.	13. Other epidemic diseases.
		A. Yellow fever.
		B. Pest.
		C. Mumps.
		D. Others.
	13. Intermittent fever and malarial cachexia.	14. Pyemia and septicemia.
		15. Glanders and farcy.
	14. Pellagra.	16. Anthrax.
	A. Of the lungs.	17. Rabies.
	B. Of the meninges.	18. Relapsing fever.
	C. Of the peritoneum.	19. Intermittent fever.
9. Tuberculosis of the lungs.	15. Tuberculosis.	20. Malarial cachexia.
10. Tuberculosis of the meninges.	D. Of the skin.	21. Pellagra.
11. Other tuberculosis.	E. Other organs or general.	A. Of the lungs.
	16. Scrofula.	B. Of the meninges.
	17. Syphilis.	C. Of the peritoneum.
	A. Of the mouth.	D. Of the skin.
	B. Of the stomach, liver.	E. Of other organs.
	C. Of the intestines, rectum.	F. General.
	D. Of the female genital organs.	23. Scrofula.
	E. Of the breast.	24. Syphilis.
	F. Others.	A. Of the mouth.
12. Cancer.	18. Cancer.	B. Of the stomach, liver.
	A. Of the mouth.	C. Of the intestines, rectum.
	B. Of the stomach, liver.	D. Of the female genital organs.
	C. Of the intestines, rectum.	E. Of the breast.
	D. Of the female genital organs.	F. Of the skin.
	E. Of the breast.	G. Others.
	F. Others.	26. Rheumatism.
	19. Rheumatism and gout.	27. Gout.
	20. Diabetes.	28. Diabetes.
		29. Exophthalmic goitre.
		30. Addison's disease.
		31. Leukemia.
		32. Anemia, chlorosis.
		33. Other general diseases.
		34. Alcoholism (acute or chronic).
		35. Lead poisoning.
		36. Other chronic poisonings of occupations.
		37. Other chronic poisonings.
[13. Anemia, chlorosis.]	21. Anemia, chlorosis.	
	22. Other general diseases.	
	23. Alcoholism (acute or chronic).	
	24. Lead poisoning and other chronic poisonings of occupations.	
	25. Other chronic poisonings.	

Diseases are printed in *italics* which appear in statistics of causes of sickness, but not of causes of death.

Three Nomenclatures of Diseases.—Continued.

FIRST NOMENCLATURE.	SECOND NOMENCLATURE.	THIRD NOMENCLATURE.
	II. Diseases of the Nervous System and of the Organs of Sense.	II. Diseases of the Nervous System and of the Organs of Sense.
14. Simple meningitis.	26. Simple meningitis and encephalitis.	38. Encephalitis.
	27. Progressive locomotor ataxia.	39. Simple meningitis.
		40. Progressive locomotor ataxia.
15. Apoplexy and softening of the brain.	28. Apoplexy and softening of the brain.	41. Progressive muscular atrophy.
		42. Cerebral hemorrhage and congestion.
	29. General paralysis.	43. Softening of the brain.
	30. Other forms of insanity.	44. Paralysis without indicated cause.
	31. Epilepsy.	45. General paralysis.
16. Non-puerperal convulsions and eclampsia.	32. Non-puerperal convulsions and eclampsia.	46. Other forms of insanity.
		47. Epilepsy.
[17. <i>Neuralgia, hysteria.</i>]	33. Other diseases { [A. <i>Hysteria</i> , of the nerv- } B. <i>Neuralgia</i> , ous system. } C. Others.	48. Non-puerperal eclampsia.
[18. <i>Diseases of the eyes and ears.</i>]	34. Diseases of the eyes and ears.	49. Convulsions of infants.
		50. Tetanus.
		51. Chorea.
		52. Other diseases { [A. <i>Hysteria</i> , of the nerv- } B. <i>Neuralgia</i> , ous system. } C. Others.]
		53. Diseases of the eyes.
		54. Diseases of the ears.
	III. Diseases of the Circulatory System.	III. Diseases of the Circulatory System.
	35. Acute pericarditis and endocarditis.	55. Pericarditis.
19. Organic diseases of the heart.	36. Organic diseases of the heart.	56. Endocarditis.
	37. Angina pectoris.	57. Organic diseases of the heart.
	38. Diseases of the arteries, atherosclerosis, aneurism, etc.	58. Angina pectoris.
[20. <i>Varices, varicose ulcers, hemorrhoids</i>]	39. Embolism.	59. Diseases of the arteries, atherosclerosis, aneurism, etc.
	40. <i>Varices, varicose ulcers, hemorrhoids.</i>	60. Embolism.
	41. Phlebitis and other diseases of the veins.	61. Varices, varicose ulcers, hemorrhoids.
	42. Diseases of the lymphatic system.	62. Phlebitis and other diseases of the veins.
	43. Other diseases of the circulatory system.	63. Lymphangitis.
		64. Other diseases of the lymphatic system.
		65. Hemorrhage.
		66. Other diseases of the circulatory system.
	IV. Diseases of the Respiratory System.	IV. Diseases of the Respiratory System.
	44. Diseases of the nasal fossæ, larynx and thyroid body.	67. Diseases of the nasal fossæ.
21. Acute bronchitis.	45. Acute bronchitis.	68. Diseases of the larynx and thyroid body.
22. Chronic bronchitis.	46. Chronic bronchitis.	69. Acute bronchitis.
23. Pneumonia, broncho-pneumonia.	47. Pneumonia and broncho-pneumonia.	70. Chronic bronchitis.
	48. Pleurisy.	71. Broncho-pneumonia.
	49. Congestion and apoplexy of lungs.	72. Pneumonia.
	50. Asthma and pulmonary emphysema.	73. Pleurisy.
24. Other diseases of respiratory system (phthisis excepted).	51. Other diseases of respiratory system (phthisis excepted).	74. Congestion and apoplexy of lungs.
		75. Gangrene of lungs.
		76. Asthma and pulmonary emphysema.
		77. Other diseases of respiratory system (phthisis excepted).
	V. Diseases of the Digestive System.	V. Diseases of the Digestive System.
	52. Diseases of the mouth, pharynx and esophagus.	78. Diseases of the mouth and adenæ.
	[53. <i>Angina.</i>]	79. Diseases of the { A. Pharynx. pharynx and } B. Esophagus. esophagus.
25. Diseases of the stomach (cancer excepted).	54. Ulcer of stomach.	80. Ulcer of stomach.
	55. Other diseases of the stomach (cancer excepted).	81. Other diseases of the stomach (cancer excepted).

Diseases are printed in italics which appear in statistics of causes of sickness, but not of causes of

Three Nomenclatures of Diseases.—Continued.

FIRST NOMENCLATURE.	SECOND NOMENCLATURE.	THIRD NOMENCLATURE.
26. Diarrhea, gastro-enteritis.	56. Infantile diarrhea, athrepsia.	82. Infantile diarrhea, athrepsia.
	57. Diarrhea, enteritis and dysentery.	83. Diarrhea and enteritis.
27. Hernia, intestinal obstructions.	58. Hernia, intestinal obstructions.	84. Dysentery.
	59. Other diseases of the intestines. { [A. Other diseases of the intestines. B. Diseases of the anus; fecal fistulas.] }	85. Intestinal parasites.
		86. Hernia, intestinal obstructions.
28. Cirrhosis of the liver.	60. Cirrhosis of the liver.	87. Other diseases of the intestines. { [A. Other diseases of the intestines. B. Diseases of the anus; fecal fistulas.] }
29. Other diseases of the liver.	61. Other diseases of the liver.	88. Acute yellow atrophy of the liver.
	62. Inflammatory peritonitis (non-puerperal).	89. Hydatid tumor of the liver.
	63. Other diseases of the digestive system (cancer and tuberculosis excepted).	90. Cirrhosis of the liver.
	VI. Diseases of the Genito-Urinary System and Adnexa.	91. Biliary calculi.
30. Nephritis and Bright's disease.	63. Nephritis and Bright's disease.	92. Other diseases of the liver.
		93. Inflammatory peritonitis (non-puerperal).
31. Other diseases of the kidneys, bladder and adnexa.	64. Other diseases of the kidneys, bladder and adnexa.	94. Other diseases of the digestive system (cancer and tuberculosis excepted).
		95. Iliaec abscess.
	[66. Metritis and leucorrhœa.]	VI. Diseases of the Genito-Urinary System and Adnexa.
		96. Acute nephritis.
		97. Bright's disease.
		98. Perinephritis and perinephritic abscess.
		99. Renal calculus.
		100. Other diseases of the kidneys and adnexa.
		101. Vesical calculi.
		102. Diseases of the bladder.
		103. Diseases of the urethra { [A. <i>Blennorrhagia</i> (males). B. Others (stricture, abscess, etc.).] }
		104. Diseases of the prostate.
		105. Diseases of the testicle and its envelopes. Orchitis.
		106. Other diseases of the male genital organs.
		107. Abscess of the pelvis.
		108. Perilutrine hematocele.
		109. Metritis.
		110. Uterine hemorrhage (non-puerperal).
		111. Uterine tumors (non-cancerous).
		112. Other diseases of the uterus.
		113. Ovarian cysts and other ovarian tumors.
		114. Other diseases of the female genital organs. { [A. <i>Blennorrhagia</i> (females). B. <i>Leucorrhœa</i> . C. Others.] }
		115. Non-puerperal diseases of the breast (cancer excepted).
	[67. <i>Blennorrhagia</i> .]	VII. Puerperal Condition.
		116. Accidents of pregnancy.
		[116. repeated. <i>Normal labor</i> .]
		117. Puerperal hemorrhage.
		118. Other accidents of labor.
		119. Puerperal septicemia. { A. Puerperal septicemia. B. Puerperal phlebitis.
		120. Puerperal metropéritonitis.
		121. Puerperal albuminuria and eclampsia.
		122. Puerperal phlegmasia alba dolens.
32. <i>Blennorrhagia</i> .]		
33. <i>Normal labor</i> .]		
34. Puerperal septicemia (puerperal fever, phlebitis, peritonitis.)	71. Puerperal septicemia (puerperal fever, phlebitis, peritonitis).	
35. Other accidents.		

Diseases are printed in *italics* which appear in statistics of causes of sickness, but not of causes of death.

Three Nomenclatures of Diseases.—Continued.

FIRST NOMENCLATURE.	SECOND NOMENCLATURE.	THIRD NOMENCLATURE.
36. Other accidents of pregnancy.	72. Other accidents of pregnancy.	123. Other accidents of pregnancy. Sudden death. 124. Puerperal diseases of the breast.
	VIII. Diseases of the Skin and Cellular Tissue.	VIII. Diseases of the Skin and Cellular Tissue.
	73. Erysipelas. 74. Gangrene. [75. <i>Anthrax, carbuncle.</i>] 76. Phlegmon, acute abscess.	125. Erysipelas. 126. Gangrene. 127. Anthrax, carbuncle. 128. Phlegmon, acute abscess.
[37. <i>Diseases of the skin.</i>]	77. Other diseases of the skin and adnexa (cancer excepted). <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;"> [A. <i>Soft chancre.</i> B. <i>Tinea tonsurans, etc.</i> C. <i>Psora.</i> D. Other diseases of the skin and adnexa. </div> </div>	129. Other diseases of the skin and adnexa (cancer excepted). <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;"> [A. <i>Soft chancre.</i> B. <i>Tinea tonsurans, trichophytosis.</i> C. <i>Pelada.</i> D. <i>Psora.</i> E. Other diseases of the skin and adnexa.] </div> </div>
	IX. Diseases of the Organs of Locomotion.	IX. Diseases of the Organs of Locomotion.
	78. Pott's disease.	130. Pott's disease.
	79. Diseases of bones.	131. Cold abscess, symptomatic abscess. 132. Other diseases of bones.
	80. Diseases of the joints. { [A. <i>Arthritis.</i> B. Others.]	133. White swellings. 134. Other diseases of the joints. { [A. <i>Arthritis.</i> B. Others.]
	81. Amputation.	135. Amputation.
	82. Other diseases of organs of locomotion.	136. Other diseases of organs of locomotion.
	X. Malformations.	X. Malformations.
38. Congenital debility and malformations.	83. Malformations.	137. Malformations.
	XI. Infantile.	XI. Infantile.
	[84. <i>Newly-born; foundlings.</i>]	[137. <i>repeated; newly-born, foundlings.</i>]
	85. Congenital debility, icterus and sclerema.	138. Congenital debility, icterus and sclerema.
	86. Want of care.	139. Want of care.
	87. Other diseases peculiar to infancy.	140. Other diseases peculiar to infancy.
	XII. Old Age.	XII. Old Age.
39. Senile debility.	88. Senile debility.	141. Senile debility.
	XIII. External Violence.	XIII. External Violence.
40. Suicide.	89. Suicide or attempt at suicide.	142. Suicide or attempt at suicide. <div style="display: inline-block; vertical-align: middle;"> <div style="display: inline-block; vertical-align: middle;"> [A. By poison. B. By asphyxia. C. By strangulation. D. By firearms. E. By cutting instruments. F. By drowning. G. By precipitation from height. H. By crushing. I. Others. </div> </div>

Diseases are printed in italics which appear in statistics of causes of sickness, but not of causes of

Three Nomenclatures of Diseases.—Concluded.

FIRST NOMENCLATURE.	SECOND NOMENCLATURE.	THIRD NOMENCLATURE.
	90. Fractures, dislocations, and other injuries.	143. Fractures.
	[91. <i>Burns.</i>]	144. Sprains and dislocations. { [A. <i>Sprains.</i> B. Dislocations.]
	92. Accidental drowning.	145. Other accidental injuries. { A. By fire. B. By corrosive substances
41. Other violent deaths.	93. Other external violence. Acute poisoning.	146. Burns. { A. By fire. B. By corrosive substances
	XIV. Ill-Defined Diseases.	147. Sunstroke and freezing.
[42. <i>Gastric disorder.</i>]	[94. <i>Gastric Disorder.</i>]	148. Accidental drowning.
	95. Dropsy.	149. Overwork and inanition. { [A. <i>Overwork.</i> B. Inanition.]
43. Other diseases.	96. Sudden Death.	150. Inhalation of noxious gases (suicide excepted).
44. Unknown or not specified diseases.	97. Abdominal tumor.	151. Other accidental poisoning.
	98. Other tumors.	152. Other external violence.
	99. Unknown or not specified diseases.	XIV. Ill-Defined Diseases.
		153. Exhaustion, cachexia.
		154. Fever. { [A. <i>Gastric disorder.</i> B. Inflammatory fever.]
		155. Dropsy.
		156. Asphyxia; cyanosis.
		157. Sudden death.
		158. Abdominal tumor.
		159. Other tumors.
		160. "Plaque."
		161. Unknown or not specified diseases.

Diseases are printed in *italics* which appear in statistics of causes of *sickness*, but not of causes of *death*.

Some diseases of frequent occurrence rarely cause death. It may be advisable to give a place to these in a *complete* nomenclature of causes of death, but not in an abbreviated one. But they should appear in even a condensed nomenclature of causes of sickness. In such cases, they are given in *italics* in the first and second nomenclatures, but not in the third, or extended list.

[AMERICAN EDITORS' NOTE.—As this translation is prepared solely for use as a basis for revising the classification of *causes of death*, no attention need be paid to any diseases printed in *italics*, and which are chiefly important as causes of sickness. In order to make this distinction clear in the following discussion of the inclusion of individual terms, the causes of sickness are cut off by brackets, as well as printed in *italics*. Thus quite a number of subdivisions of titles, distinguished as "A," "B," etc., disappear from present consideration, only the general title corresponding to the list number remaining. A discrepancy (found in the original) appears in the number of classes, or general groups, given in the foregoing and in the following lists. Instead of fourteen classes, as given above, there are fifteen in the following text. This difference, which depends on the division of "General Diseases" into "Epidemic Diseases," and "Other General Diseases," is of no practical consequence, since the individual terms of the list, designating particular diseases, are chiefly important.]

EXPLANATION OF THE TITLES OF THE NOMENCLATURE OF DISEASES.

(Third Nomenclature.)

LIST showing the synonyms and connected diseases under each title, with references to the diseases which occur as complications of the principal diseases.

GENERAL DISEASES.

I. Epidemic Diseases.

1. Typhoid fever. *This title includes:* Dothinenteritis; mucous, continued, ataxic, or adynamic fever; abdominal typhus.

This title does not include: Adynamia (154); ataxo-adynamia (154); typhoid pneumonia (72).

Frequent complications: Pneumonia; pulmonary congestion; intestinal perforation; peritonitis; intestinal hemorrhage; sloughing; albuminuria.

2. Typhus. *This title includes:* Petechial fever; exanthematic typhus.

This title does not include: Abdominal typhus (1).

3. Scurvy. *This title includes:* Purpura hemorrhagica; Werlhoff's disease.

4. Smallpox. *This title includes:* Variola; varioloid.

This title does not include: Varicella (13).

Frequent complications: Meningitis; endocarditis; suppuration; albuminuria.

5. Measles. *This title includes:* Measly or rubeolar eruption.

This title does not include: Rubella (13).

Most frequent complications: Bronchitis; broncho-pneumonia, etc.

6. Scarlet fever. *This title includes:* Puerperal scarlatina; scarlatinal angina.

Frequent complications: Albuminuria; eclampsia; edema of the glottis; hemorrhage; endocarditis; pericarditis; paralysis; diphtheria; convulsions.

7. Whooping cough.

Frequent complications: Bronchitis; convulsions.

8. Diphtheria and croup. *This title includes:* Diphtheritic, pseudo-membranous, infectious, malignant or toxic anginas; diphtheria in all forms and especially diphtheria of wounds, of the skin, of the conjunctiva, mouth, etc.; pseudo-membranous bronchitis; pseudo-membranous laryngitis; malignant laryngitis; diphtheritic paralysis.

This title does not include: Stridulous croup (68); spasmodic croup (68); false croup (68).

Frequent complications: Pneumonia; albuminuria; paralysis.

9. Influenza. *This title includes:* Grip; pneumonia due to influenza; bronchitis or broncho-pneumonia due to influenza.

10. Miliary fever.

11. Asiatic cholera. *This title includes:* Indian cholera; cholera (without epithet); cholera morbus; epidemic cholera.

12. Cholera nostras. *This title includes:* Sporadic cholera; cholericine; every disease (diarrhea, dysentery, enteritis, typhus, etc.) accompanied by the epithet "cholericiform."

This title does not include: Cholera infantum (82); antimonial cholera (151); hernial cholera (86).

13. Other epidemic diseases. *This title includes:* Pest; yellow fever; eruptive or exanthematic fever; zymotic disease; mumps; German measles; acrodynia; chicken-pox; and every other epidemic disease not specified in the nomenclature.

This title does not include: Epidemic dysentery (84); epidemic cerebrospinal meningitis (39).

Note.—Whenever a disease here included becomes epidemic it will be necessary to expand the title so that it may be stated separately.

II. Other General Diseases.

14. Purulent infection and septicemia. *This title includes:* Pyemia; absorption of purulent matter; putrid infection; putrid fever; dissection wound; streptococcus infection of the blood (*streptococchémie*).

This title does not include: Puerperal septicemia (119 B); infectious fever (33).

Note.—Whenever the death of an adult female is reported as having occurred from "septicemia," the certificate should be returned to the physician for statement as to whether the septicemia was or was not puerperal.

15. Glanders.

16. Farcy.

17. Malignant pustule and charbon.

18. Rabies. *This title includes:* Hydrophobia.

This title does not include: Sitiophobia (46).

19. Intermittent fever. *This title includes:* Paludal fever; pernicious fever; pernicious attack; remittent fever; malaria.

This title does not include: Malarial cachexia (20).

20. Malarial cachexia. *This title includes:* Marsh or pernicious cachexia; marsh anemia; paludism.

This title does not include: Pernicious anemia (32).

Frequent complications: Dropsy; enlargement of the spleen; cardiac or renal lesions.

21. Pellagra.

22 A. Tuberculosis of the lungs. *This title includes:* Pulmonary tuberculosis; pulmonary phthisis; phthisis (without epithet); phymatosis; tubercle of the lungs; acute, galloping or miliary tuberculosis or phthisis; granulations (of the lungs); pulmonary cavities; consumption; caseous pneumonia; tubercular, bacillary, specific, granular, neoplastic or heteroplastic bronchitis or pneumonia; tubercular pleurisy; pulmonary anthracosis; tubercular hemoptysis.

This title does not include: Tuberculosis (without epithet) (22 F); hemoptysis (without epithet) (77 B); pulmonary hemorrhage (77 B); bronchorrhagia (without epithet) (77 B); apical pneumonia (72); laryngeal phthisis (22 E).

Frequent complications: Hemorrhage; pneumonia; pleurisy; persistent diarrhea.

22. B. Tuberculosis of the meninges. *This title includes:* Meningeal tuberculosis; tubercular meningitis; granular, miliary, caseous, bacillary, specific, neoplastic or heteroplastic meningitis.

This title does not include: Meningitis (without epithet), even for children of early age.

22 C. Tuberculosis of the peritoneum. *This title includes:* Tubercular, granular, bacillary or specific peritonitis; peritoneal tuberculosis; abdominal tuberculosis; tabes mesenterica.

This title does not include: Tubercular enteritis (22 E).

22 D. Tuberculosis of the skin. *This title includes:* Lupus; *esthiomène*.

22 E. Tuberculosis of other organs. *This title includes:* Laryngeal phthisis; tubercular laryngitis; tubercular nephritis; tubercular enteritis; bacillary abscess; tubercular ulcer; tuberculosis of the bones.

This title does not include: Pott's disease (130).

22 F. General tuberculosis. *This title includes:* Tuberculosis (without epithet).

23. Scrofula. *This title includes:* Lymphatism; scrofulide.

This title does not include: Scrofulous or lymphatic blepharitis, conjunctivitis or keratitis (53).

24. Syphilis. *This title includes:* Pox; hard or infectious chancre; chancre of the mouth or face; primary, secondary and tertiary lesions; specific disease; mucous plaques; osteoscopic pains; every disease qualified as "syphilitic."

This title does not include: Soft, simple or phagedenic chancre (129 A).

25. A. Cancer of the Mouth. *This title includes:* Cancer of the lips, tongue, roof of the mouth, or of the *velum palati*; cancer of the jaw; epithelioma, carcinoma, or canceroid of those parts; smokers' cancer.

25 B. Cancer of the stomach; of the liver. *This title includes:* Cancer of the esophagus; cancer of the cardiac portion of the stomach; cancer of the pylorus; carcinoma; scirrhus; colloid or encephaloid tumor of those parts; gastro-carcinoma; tumor of the stomach.

This title does not include: Organic lesion of the stomach (81); hematemesis (81).

25 C. Cancer of the intestines; of the rectum. *This title includes:* Cancer of the colon; cancer of the anus; carcinoma, scirrhus, encephaloid, canceroid or epithelioma of those parts.

25 D. Cancer of the female genital organs. *This title includes:* Cancer of the womb; cancer of the ovary; cancer of the vagina; cancer of the vulva; carcinoma, scirrhus, encephaloid, colloid, heteromorphous or neoplastic tumor, sarcoma or epithelioma of those organs.

25 E. Cancer of the breast. *This title includes:* Carcinoma, scirrhus, encephaloid, colloid, heteromorphous or neoplastic tumor, canceroid or epithelioma of the breast or mammary gland.

25 F. Cancer of the skin. *This title includes:* Canceroid (without epithet); epithelioma or epithelial tumor (without epithet); cancer of the face or cervicofacial cancer; *noli-me-tangere*.

This title does not include: Lupus (22 D); esthiomene (22 D).

25 G. Cancer of other organs. *This title includes:* Cancer of the peritoneum; cancerous peritonitis; pelvic cancer; cancer of the kidney, bladder or prostate; cancerous goitre; thyreo-sarcoma; sarco-hydrocele; cancer of bone; osteosarcoma; cancerous tumor or sarcoma of the neck; carcinoma, scirrhus, encephaloid, cancerous ulcer, malignant tumor, sarcoma, or malignant fungus of these parts or of unspecified part of the body.

This title does not include: Cancer of the esophagus (25 B); cancer of the anus (25 C); cancer of the ovary, vagina or vulva. (25 D).

26. Rheumatism. *This title includes:* Arthritis; rheumatismal arthritis; rheumatismal meningitis; abdominal or cerebral rheumatism; rheumatismal vertigo; rheumatismal endocarditis, pericarditis, pleurisy or peritonitis.

This title does not include: Organic diseases of rheumatismal origin (57, etc.); nodose rheumatism (136); gonorrheal rheumatism (103 A or 114 A).

27. Gout.

28. Diabetes. *This title includes:* Glycosuria.

Frequent complications: Pneumonia; carbuncle; gangrene; hemorrhage and softening of the brain; tuberculosis.

29. Exophthalmic Goitre. *This title includes:* Basedow's disease; Graves's disease.

Frequent complications: Hypertrophy of the heart; cachexia.

30. Addison's disease.

Frequent complications: Cachexia; ascites.

31. Leukemia. *This title includes:* Leukemic adenitis; leukocythemia; Hodgkin's disease.

Frequent complications: Hemorrhage; ascites; apoplexy; cachexia.

32. Anemia, chlorosis. *This title includes:* Pernicious anemia.

This title does not include: Cerebral anemia (52 C).

33. Other general diseases. *This title includes:* Relapsing fever; auto-intoxication; infectious fever; recurrent fever; virulent disease (without other explanation); visceral steatosis; acromegaly; leprosy; syringo-myelitis; Morvan's disease; myxedema; pachydermic cachexia; general fatty or amyloid degeneration.

34. Alcoholism, acute or chronic. *This title includes:* Drunkenness; alcoholic intoxication; alcoholic dementia; delirium tremens; absinthism; dipsomania.

This title does not include: Alcoholic cirrhosis (90); general alcoholic paralysis (45); atheroma, (59) or any organic disease attributed to alcoholism; amblyopia from intoxication (53).

35. Lead poisoning. *This title includes:* Lead colic; painters' colic; brain disease caused by lead; lead paralysis; chronic lead poisoning; all diseases caused by lead.

36. Other chronic poisonings of occupations. *This title includes:* Mercurial poisoning (hydrargyrisms); phosphorous, arsenical or other chronic poisonings in which the statement of the physician (or in default thereof, the occupation of the decedent) indicates very clearly that the poisoning was due to the occupation. In the absence of either of these indications, the death should be classified under title (37). Phosphorous necrosis is always due to occupation.

37. Other chronic poisonings. *This title includes:* Morphinism; cocaineism; chronic ergotism.

This title does not include: Amblyopia from intoxication (53).

Note.—See inclusion of preceding title.

LOCAL DISEASES.

III. Diseases of the Nervous System and of the Organs of Special Sense.

38. Encephalitis. *This title includes:* Brain fever.

39. Simple meningitis. *This title includes:* Meningitis (without epithet); meningo-encephalitis; pachymeningitis; epidemic cerebro-spinal meningitis.

This title does not include: Tubercular meningitis or any of its synonyms (22 B); rheumatismal meningitis (26).

Note.—When epidemic cerebro-spinal meningitis prevails, it will be necessary to double this title, giving the disease a special line.

40. Progressive locomotor ataxia. *This title includes:* Duchenne's disease.

41. Progressive muscular atrophy. *This title includes:* Fatty degeneration of the muscles; atrophic muscular paralysis; amyotrophy; amyotrophic paralysis; atrophic paralysis; pseudo-hypertrophic paralysis.

42. Congestion and hemorrhage of the brain. *This title includes:* Apoplexy; cerebral apoplexy; meningeal apoplexy; serous apoplexy; cerebral atheroma; edema of the brain; cerebral effusion; meningeal hemorrhage; hemorrhage of the spinal cord; cataplexy; apoplectic dementia.

Frequent complications: Hemiplegia; paralysis.

43. Softening of the brain.

This title does not include: Senile dementia (141).

Frequent complications: Hemiplegia; paralysis; pulmonary congestion.

44. Paralysis without indicated cause. *This title includes:* Paralysis (without epithet); hemiplegia; paraplegia; facial paralysis; spinal paralysis.

This title does not include: Diphtheritic paralysis (8); atrophic muscular paralysis (41); pseudo-hypertrophic paralysis (41); general paralysis (45); paralytic cachexia or marasmus (45); paralytic dementia or insanity (45); paralysis agitans, "shaking palsy," (52 C); bulbar paralysis (52 C); ascending paralysis (52 C); infantile paralysis (52 C); labio-glosso-laryngeal paralysis (52 C); paralysis of the palate (79 A); paralysis of the ocular muscles (53).

45. General paralysis. *This title includes:* General paralysis of the insane; paralytic insanity; paralytic dementia; paralytic cachexia; paralytic marasmus; diffuse meningo-encephalitis; diffuse periencephalitis.

46. Other forms of mental alienation. *This title includes:* Dementia; insanity; mental unsoundness; hallucinations; mania; megalomania; monomania; delusion of persecution; melancholia; lypemania; hypochondria; spleen; nosomania; nosophobia; sitophobia; lycantrophy; nostalgia; homesickness; andromania; nymphomania; priapism; satyriasis; mental disease.

This title does not include: Alcoholic dementia or delirium (34); delirium tremens (34); delirium (161); uremic delirium (97); apoplectic dementia (42); paralytic dementia (45); choreic dementia (51); senile dementia (141); hysteria (52 A).

47. Epilepsy. *This title includes:* *Haut mal*; Hercules' disease; *mal comitial*.

This title does not include: Epileptiform convulsions (48).

48. Eclampsia (non-puerperal). *This title includes:* Epileptiform convulsions (of adults).

This title does not include: Scarlatinal eclampsia (6); uremic convulsions (97); convulsions of young children (49).

Note.—Whenever the death of an adult female is reported as having occurred from "eclampsia" ("convulsions"), without other explanation, the certificate should be returned to the physician for statement as to whether the disease was or was not puerperal.

49. Convulsions of infants. *This title includes:* Eclampsia of infants; infantile spasms; trismus neonatorum.

50. Tetanus. *This title includes:* Opisthotonos; emprosthotonos; pleurosthotonos.

51. Chorea. *This title includes:* Choreic dementia; athetosis; Bergeron's disease.

52. [A. Hysteria.] *This title includes:* Hysterical anorexia; hysterical colic; every disease qualified as "hysterical."

52 [B. Neuralgia.] *This title includes:* Tic douloureux; sciatica.

52 [C.] Other diseases of the nervous system. *This title includes:* Diseases of the spinal cord; multiple sclerosis; symmetrical sclerosis; lateral sclerosis; sclerosis (without epithet); tabes dorsalis spasmodica; hematomyelia; hematorrhachis; myelitis; congestion of the medulla; disease of the bulb; bulbar paralysis; labio-glosso-laryngeal paralysis; paralysis agitans; "shaking palsy"; Parkinson's disease; paramyoclonus multiplex; ascending paralysis; infantile paralysis; fatty or amyloid degeneration of the cord or of the nervous system; Friedrich's disease; compression of the cord; cerebral compression; cerebral tumor; neuroma; disease of the brain (without qualification); idiocy; imbecility; cretinism; amnesia; paramnesia; loss of speech; aphasia; affections of the brain or nerves; cerebral anemia; neurosis; tic; *tic convulsif*; contracture; anesthesia; neurasthenia; migraine; vertigo; somnambulism; catalepsy; bulimia; Charcot's disease; Landry's paralysis; symptomatic or Jacksonian epilepsy.

This title does not include: Dementia or imbecility of old age (141); syringo-myelitis (33); myxedema (33); pachydermic cachexia (33).

53. Diseases of the eyes and of their appendages. *This title includes:* Ophthalmia; foreign body; conjunctivitis (including gonorrheal conjunctivitis but not including diphtheritic conjunctivitis); [an extended list of diseases of the eye which it is unnecessary to mention among *causes of death*; the same remark applies to some other categories, which with this exception, however, are given in full.—TR.];

diseases of the lachrymal gland and of the lachrymal canals; diseases and tumors of the orbit (cancer excepted).

This title does not include: Cancer of the eye (25 G); ocular tuberculosis, (22 F); exophthalmic goitre (29); exodhthalmia (29).

54. Diseases of the ears. *This title includes:* Otitis; otorrhea; catarrh of the ear; hydrotitis; foreign body in the auditory canal; obstruction of the auditory canal; polypus of the ear; inflammation of the tympanum; *vertigo ab aure læso*; Meniere's disease or vertigo; caries of the petrous portion of the temporal bone; deafness; deaf-mutism.

This title does not include: Mumps (13).

IV. Diseases of the Circulatory System.

55. Pericarditis. *This title includes:* Cardio-pericarditi; hydro-pericardium; hydro-pneumo-pericardium; cardiac adhesion.

This title does not include: Rheumatismal pericarditis (26); endopericarditis (56) pleuropericarditis (73); pneumopericarditis (72).

56. Endocarditis. *This title includes:* Myocarditis, endopericarditis.

This title does not include: Rheumatismal endocarditis or other acute cardiac affections occurring during an attack of rheumatism (26).

57. Organic diseases of the heart. *This title includes:* Aortic, mitral, tricuspid, cardiac, or valvular affections or lesions; insufficiency; stenosis; Corrigan's disease; cardiac cachexia; hypertrophy of the heart; dilation of the heart; cardiectasis; steatosis of the heart; degeneration of the heart; cardiopathy; cardiosclerosis; cardiovascular sclerosis; cardiomalacia; persistent foramen ovale; palpitation of the heart; asystole; cardiac asthma.

This title does not include: Heart affections (undetermined character) (66).

Frequent complications: Dropsy; bronchitis and pneumonia; albuminuria; embolism; thrombosis.

58. Angina pectoris. *This title includes:* Cardialgia; sternalgia.

59 Diseases of the arteries, atheroma, aneurism, etc. *This title includes:* Arteritis; fatty degeneration of the arteries; arteriosclerosis; aortic ectasis; Hodgson's disease; stenosis of the pulmonary artery; aortis; aneurismal tumor.

This title does not include: Aortic disease (57).

60. Embolism. *This title includes:* Thrombosis (non-puerperal).

This title does not include: Thrombosis (puerperal).

61. Varices, varicose ulcers, hemorrhoids. *This title includes:* Varicocele.

Frequent complications: Phlebitis; hemorrhage; embolism.

62. Phlebitis and other diseases of the veins. *This title includes:* Phlegmasia alba dolens (non-puerperal); pneumophlebitis.

This title does not include: Puerperal phlebitis (119 B).

63. Lymyhangitis. *This title includes:* Angioleucitis.

This title does not include: Suppurative adenitis (128); adeno-phlegmon (128); bubo (128 or 129 A or 24).

64. Other diseases of the lymphatic system. *This title includes:* Adenoma; adenopathy; lymphoma; lymphadenoma; lymphatocele.

This title does not include: Suppurative adenitis (128); adeno-phlegmon (128); leukemic adenia (31); lymphatism (23).

65. Hemorrhages. *This title includes:* Hemorrhage (without epithet); ligature of an artery; internal hemorrhage; hemophilia; epistaxis; tamponment of nasal fossæ; stomatorrhagia; cutaneous hemorrhage; hematuria.

This title does not include: Cerebral hemorrhage (42); cerebellar hemorrhage (42); meningeal hemorrhage (42); pulmonary hemorrhage; (77B); hemoptysis (77B); hematemesis (81); intestinal hemorrhage (87); uterine hemorrhage (118 or 110 according to

whether it is puerperal or not); metrorrhagia (118 or 110); umbilical hemorrhage (140); traumatic hemorrhage (145).

66. Other diseases of the circulatory system. *This title includes:* Heart affections (undetermined character); splenitis; splenopathy; enlargement of spleen; splenocele and other affections of the spleen; angiectasis; angiectopia; angioma; erectile tumor; disease of the great vessels; permanent slow pulse.

This title does not include: Affections of the spleen due to leukemia (31); or intermittent fever (19); vascular nevus (197).

V. Diseases of the Respiratory System.

67. Diseases of the nasal fossæ. *This title includes:* Coryza; "cold"; nasal or nasopharyngeal polypus; ozena; foreign body; abscess of the nasal fossæ; adenoid vegetations.

This title does not include: Epistaxis (65); syphilitic coryza (24).

68. Diseases of the larynx or thyroid body. *This title includes:* Acute, chronic, erysipelatous, edematous, phlegmonous, or stridulous laryngitis; aphonia; loss of voice; false croup; spasmodic croup; stridulous croup; edema of the glottis; spasm of the glottis; polypus of the larynx; goiter; thyreocele; stricture of the larynx; laryngotomy.

This title does not include: Tubercular laryngitis (22 E); laryngeal tuberculosis (22 E); laryngeal phthisis (22 E); croup (8); diphtheritic laryngitis and its synonyms (8); foreign body in the larynx (152).

69. Acute bronchitis. *This title includes:* Capillary bronchitis; trachitis; tracheo-bronchitis; broncho-alveolitis.

This title does not include: Broncho pneumonia (71); specific bronchitis or any other synonym of tuberculosis of the lungs (see 22 A); fetid bronchitis (75); summer bronchitis (76).

Note.—See note under No. 70.

70. Chronic bronchitis. *This title includes:* Catarrhal bronchitis; catarrh (without epithet); bronchial, pituitary, pulmonary or suffocative catarrh; bronchorrhea; dilation of the bronchi; bronchiectasis.

This title does not include: Fetid bronchitis (75).

Note.—Certificates of death in which the word *bronchitis* is not definitely stated to be acute or chronic should be referred to the physician for an exact statement. When it is not possible to obtain one, deaths of children should be classified under No. 69, and deaths of adults and old persons under No. 70.

71. Broncho-pneumonia. *This title does not include:* Capillary bronchitis (69).

72. Pneumonia. *This title includes:* Acute pulmonary catarrh; interstitial pneumonia; cirrhosis of the lung; pulmonary sclerosis; spleno-pneumonia; pneumonia of the apex; peripneumonia; pneumopericarditis; typhoid pneumonia.

This title does not include: Caseous pneumonia (22 A); specific pneumonia; (22 A); bacillary pneumonia (22 A), or any other synonym of tuberculosis of the lungs (see 22 A); pleuro-pneumonia (73); pulmonary congestion (74).

73. Pleurisy. *This title includes:* Pleuro-pneumonia; pneumo-pleurisy; pleuro-pericarditis; pleuritic or thoracic effusion; hyero-pneumo-thorax; pyothorax; pleural abscess; pneumo-pyothorax; hemothorax; thoracentesis; empyema; pulmonary adhesion.

This title does not include: Pleurodynia (77 B) pneumo-thorax (77 B).

74. Congestion of the lungs, pulmonary apoplexy. *This title includes:* Atelectasis of the lungs in adults.

This title does not include: Atelectasis of the lungs in the newly-born (139).

75. Gangrene of the lungs. *This title includes:* Fetid bronchitis.

76. Asthma. *This title includes:* Summer catarrh; summer bronchitis; hay fever.

This title does not include: Cardiac asthma (57); suffocative catarrh (70).

77. A. Pulmonary emphysema. *This title includes:* Emphysema (without epithet).

This title does not include: Subcutaneous emphysema.

77 B. Other diseases of the respiratory system (consumption excepted). *This title includes:* Tracheostenosis; edema of the lungs; pneumothorax; pleurodynia; pneumopathy; hydatids of the lung; pulmonary calculus; abscess of the lung. Also the following, in which the nature of the pulmonary disease is not clearly defined: Organic lesion of the lung; pulmonary affection; hemoptysis; spitting of blood; pulmonary hemorrhage; pneumorrhagia; bronchorrhagia; tracheotomy.

This title does not include: Cancer of the lung (25 G).

VI. Diseases of the Digestive System.

78. Diseases of the mouth and of its associated organs. *This title includes:* Stomatitis; diseases of the gums; epulis; gingivitis; bleeding from the gums; glossitis; diseases of the tongue (cancer excepted); parotid tumor; parotitis; salivary fistula; ranula; thrush; diseases of the teeth; odontalgia; dental caries; staphylitis; staphyloplasty; staphylorrhaphy.

This title does not include: Cancer of the lips or of the tongue (25 A); chancre of the mouth (24); noma (126); mumps (13); gangrene of the mouth (126); diseases of the palate (132 or 24); fracture of the jawbone (143); necrosis of the jawbone (24 or 36 or 132); paralysis of the velum palati (79 A).

79 A. Diseases of the pharynx. *This title includes:* Ludwig's disease or angina; anginas of every nature (except diphtheria and its synonyms; see title 8); amygdalitis; quinsy; abscess of the pharynx, or of the throat; retropharyngeal abscess; paralysis of the velum palati; elongation of the uvula; pharyngitis.

This title does not include: Angina pectoris (58); cardiac angina (58); scarlatinal angina (6).

79 B. Diseases of the esophagus. *This title includes:* Esophagitis; foreign body in the esophagus; lesion of the esophagus; stenosis of the esophagus (except from cancer); spasm of the esophagus; esophagotomy.

This title does not include: Cancer of the esophagus (25 B).

80. Ulcer of the stomach. *This title includes:* *Ulcus rotundum* (round ulcer of the stomach).

Frequent complications: Hematemesis, perforation of the stomach, peritonitis.

81. Other diseases of the stomach (cancer excluded). *This title includes:* Dilatation of the stomach; dyspepsia; apepsia; gastritis; gastro-hepatitis; foreign body in the stomach; gastrotomy; non-traumatic perforation of the stomach; gastralgia; *vertigo a stomacho laeso*; catarrh of the stomach; gastrorrhea; indigestion. Also the following in which the nature of the disease affecting the stomach is not clearly defined: Organic lesion of the stomach; gastrorrhagia; hematemesis; hemorrhage from the stomach.

This title does not include: Gastro-enteritis (82 or 83 according to age).

82. Infantile diarrhea; athrepsia. *This title includes:* Gastro-enteritis or gastro-colitis of infants; infantile enteritis; cholera infantum.

83. Diarrhea and enteritis. *This title includes:* Gastro-enteritis or gastro-colitis of adults; enteritis of adults; diarrhea of adults; lientery; intestinal ulcerations; colitis; intestinal colic; flatulent colic; inflammatory colic.

This title does not include: Tubercular enteritis (22 E).

84. Dysentery. *This title includes:* Dysentery of Cochin China; epidemic dysentery.

This title does not include: Choleric form dysentery (12).

Note.—When epidemic dysentery prevails, it will become necessary to double the title "dysentery."

85. Intestinal parasites. *This title includes:* Helminthes; oxyures; tenia; tenia solium, ascaris lumbricoides; coenurus; trematoda; trichocephalus; ankylostoma; "worm colic."

86. Hernia, intestinal obstruction. *This title includes:* Intestinal strangulation; intestinal invagination; stercoral tumor; ileus; intestinal occlusion; volvulus; hernial cholera; hernial gangrene. *Also the following diseases and operations for causes not clearly defined:* Hydro-pneumatocele; merocele; sarcoepiplocele; sarcoepiplophalus; kelotomy; artificial anus; stercoral vomiting.

This title does not include: Laparotomy (without other indication) (158).

Frequent complications: Peritonitis.

87. [A.] Other diseases of the intestines. *This title includes:* Intestinal paralysis; enteroptosis; constipation; stercoral fever; intestinal calculi; intestinal perforation; foreign body in the intestine or rectum; rectitis. *Also includes the following diseases of which the nature is not indicated, and the following operations for causes not precisely defined:* Enterotomy; artificial anus; enterorrhagia; intestinal hemorrhage; melena; prolapse of the rectum; stricture of the rectum.

This title does not include: Stercoral tumor (86); intestinal invagination and its synonyms (see 86); typhlitis (95); perityphlitis (95).

87. [B. Diseases of the anus and fecal fistulas.] *This title includes:* Proctitis; periproctitis; proctocoele; procoposis; fissure of the anus; abscess of the margin of the anus; anal, stercoral, recto-vaginal or recto-vesical fistula.

This title does not include: Urinary fistulas involving the rectum (103 B); artificial anus (87 A); imperforate anus (137).

88. Icterus gravis. *This title includes:* Acute yellow atrophy of the liver; parenchymatous hepatitis; Weil's disease.

This title does not include: Icterus or jaundice (without epithet) (92); chronic jaundice (92); *icterus neonatorum* (139).

89. Hydatid tumors of the liver. *This title includes the following diseases of which the seat is not indicated:* Hydatid cyst; hydatids; echinococci.

90. Cirrhosis of the liver. *This title includes:* Cirrhosis (without epithet); alcoholic cirrhosis; interstitial cirrhosis; amyloid or fatty degeneration of the liver; steatosis of the liver; alcoholic, or interstitial, or chronic hepatitis.

This title does not include: Organic lesion of the liver (92); hypertrophy of the liver (92).

Frequent complications: Dropsy; hemorrhage; pneumonia; tuberculosis.

91 Biliary calculi. *This title includes:* Hepatic calculi; biliary lithiasis; hepatic colic.

92. Other diseases of the liver. *This title includes:* Hepatitis; acute hepatitis; angio-cholitis cholecystitis; hepatocystitis; choluria. *It also includes the following ill-defined diseases:* Organic diseases of the liver; tumor of the liver; hypertrophy of the liver; acholia; cholemia; icterus; chronic icterus; jaundice; hepatic congestion.

This title does not include: Acute yellow atrophy of the liver (88); *icterus neonatorum* (139).

93. Inflammatory peritonitis (non-puerperal). *This title includes:* Peritonitis (without epithet); chronic peritonitis; peritoneal adhesion; epiploitis; metroperitonitis; pelvic peritonitis.

This title does not include: Tubercular peritonitis (22 C); cancer of the peritoneum (25 G); puerperal peritonitis (120); rheumatismal peritonitis (26).

94. Other diseases of the digestive system (cancer and tuberculosis excepted). *This title includes:* Diseases of the pancreas (cancer excepted).

95. Abscess of the iliac fossa. *This title includes:* Iliac phlegmon or abscess; typhlitis; perityphlitis; typho-dicliditis; appendicitis.

This does not include: Abscess of the pelvis (107); periuterine abscess (107); pelvic suppuration (107).

VII. Diseases of the Genito-Urinary System and Adnexa.

96. Acute nephritis. *This title includes:* Acute nephritis; pyelo-nephritis; nephro-pyosis.

This title does not include: Scarlatinal nephritis (6); chronic nephritis (97); tubercular nephritis (22 B); nephritis of pregnancy (121).

97. Bright's disease. *This title includes:* Chronic, albuminous, interstitial or parenchymatous nephritis; albuminuria; amyloid or fatty degeneration of the kidneys; amyloid kidney; steatosis of the kidneys; renal sclerosis. *It also includes the following indefinite statements:* Uremia; uremic convulsions; uremic delirium.

This title does not include: Organic disease of the kidneys (100); puerperal uremia (121); cardiac albuminuria (57).

Frequent complications: Anasarca; dropsy; convulsions; hemorrhage; cerebral apoplexy; pneumonia.

98. Perinephritis and perinephritic abscess.

99. Renal calculus. *This title includes:* Ureteral or renal calculus; renal colic; nephrolithiasis.

This title does not include: Stone (101); vesical calculus (101).

100. Other diseases of the kidneys and adnexa. *This title includes:* Pyelitis; anuria; renal congestion; *ectopia renalis*; nephroptosis; floating or moveable or displaced kidney; renal cysts; multiple cysts of the kidney; hydronephrosis. *It also includes the following ill-defined returns:* Organic disease of the kidneys; nephrorrhagia.

This title does not include: Hematuria (65).

101. Vesical calculi. *This title includes:* Gravel; stone; urinary calculus; urinary lithiasis; lithotritry; lithoclasty.

This title does not include: Prostatic calculus (104). See also (99).

102. Diseases of the bladder. *This title includes:* Acute or chronic cystitis; vesical or urethral catarrh; cystorrhagia; tumor of the bladder; cystocele; cystopsis; foreign body in the bladder; lithotomy; cystotomy; retention of urine; dysuria; paralysis of the bladder; vesical inertia; incontinence of urine; vesical tenesmus.

This title does not include: Hematuria (65); urinary fistulas involving the bladder (103 B); cystosarcoma (25 G).

103. [A. *Blennorrhagia (males).*] *This title includes:* Blennorrhea; gonorrhea; urethritis; balanitis; balanorrhagia; balanoposthitis; gonorrheal cystitis; gonorrheal rheumatism; gonorrheal arthritis; gonorrheal bubo.

This title does not include: Gonorrheal ophthalmia or conjunctivitis (53); orchitis (105).

Frequent complications: Bubo; adenitis; cystitis; orchitis.

103 [B.] Other diseases of the urethra, urinary abscess, etc. *This title includes:* Stricture; foreign body in the urethra; urethrotomy; urinary fistula (urethral, urethro-rectal, recto-vesical, vesico-vaginal, or vesico-metro-rectal); urinary infiltration; urinary toxemia; urethralgia; urethrorrhagia; urinemia; urethroplasty; urethrorrhaphy.

This title does not include: Urethral catarrh (102); retention of urine (102).

104. Diseases of the prostate. *This title includes:* Hypertrophy of the prostate; prostatitis; abscess of the prostate; prostatic calculus.

This title does not include: Cancer of the prostate (25 G).

105. Diseases of the testicle and its envelopes.—Orchitis. *This title includes:* Epididymitis; funiculitis; vaginalitis; hydrocele; hematocele of the testicle, cord or scrotum; castration (of males); Malassez's disease.

This title does not include: Cancer of the testicle (25 G); tuberculosis of the testicle (22 E); variocoele (61); sarco-hydrocele (25 G); sarcocele (without epithet) (25 G); syphilitic sarcocele (24); spermatorrhea (106).

106. Other diseases of the male genital organs. *This title includes:* Phimosi; paraphimosi; amputation of the penis; spermatorrhea.

This title does not include: Variocoele (61).

107. Abscess of the pelvis. *This title includes:* Periuterine or retrouterine abscess or phlegmon; pelvic suppuration.

This title does not include: Abscess of the iliac fossa (95).

108. Periuterine hematocele. *This title includes:* Retrouterine hematocele.

109. Metritis. *This title includes:* Ulceration of the uterus; ulcer of the cervix.

110. Uterine hemorrhage (non-puerperal). *This title includes:* Metrorrhagia; menorrhagia; Huguier's disease; *tamponnement* of the vagina or uterus.

111. Uterine tumor (non-cancerous). *This title includes:* Uterine fibroma; fibrous tumor or fibrous body of the uterus; hystero-myoma; uterine polypus; fungus or fungosity of the uterus.

112. Other diseases of the uterus. *This title includes:* Uterine or vaginal catarrh; deviation, antelexion, retroflexion, anteversion, retroversion, or prolapse of the uterus; prolapse of the vagina; elongation of the uterus; amenorrhea; hypertrophy of the cervix; dysmenorrhea, organic disease of the uterus; hysterectomy; hysterotomy; metrotomy; ablation of the uterus.

This title does not include: Puerperal affections.

113. Cysts and other ovarian tumors. *This title includes:* Ovariectomy; castration (of females).

114 [A. *Blennorrhagia (females).*] *This title includes:* Vaginitis (in females); gonorrheal rheumatism.

This title does not include: Gonorrheal ophthalmitis or conjunctivitis (53); vaginismus (114 C); vaginalitis (105).

114 [B. *Leucorrhœa*]. *This title includes:* "Whites"; vaginal discharge.

114 [C.] Other diseases of the female genital organs. *This title includes:* Vaginitis; vaginal tumor; ovaritis; salpingitis; salpinx; metrosalpingitis; hematosalpinx; pyosalpinx; sterility; aphoria; abscess or cysts of the vulvo-vaginal glands.

This title does not include: Urinary fistulas (103 B); and fecal fistulas (87 B) involving the genital organs.

115. Non-puerperal diseases of the breast (cancer excepted). *This title includes:* Mammitis; abscess of the breast (non-puerperal) cyst of the mamma; tumor of the breast (non-cancerous or unspecified); amputation of the breast.

This title does not include: Fissure of the nipple (124); fistula of the breast (puerperal or unspecified (124); cancerous tumors of the breast (25 E).

VIII. Puerperal Condition.

Note.—It sometimes happens that the physician neglects to state the puerperal character of the disease. Hence the following rule is laid down for statistical offices: In every such case in which an adult female is reported as having died of a disease which might be of puerperal character, the certificate of death should be returned to the signer for explanation as to whether the disease was puerperal or not. These diseases are the following: Peritonitis; pelvic peritonitis; metropéritonitis; septicemia; hemorrhage; metrorrhagia; eclampsia; phlegmasia alba dolens; phlebitis; emphyangitis; embolism; sudden death; abscess of the breast.

116. Accidents of pregnancy. *This title includes:* Abortion or miscarriage (death of the mother); hemorrhage during pregnancy; uncontrollable vomiting; rupture of tubal pregnancy.

[116, repeated. *Normal childbirth*]. *This title includes:* Pregnancy; childbirth, even when it is not stated that the accouchment took place at a hospital.

117. Puerperal hemorrhage. *This title includes:* Puerperal metrorrhagia.

118. Other accidents of childbirth. *This title includes:* Dystocia; Cæsarian section; rupture of the uterus; metrorrhagia; laceration or rupture of the perineum; perineorrhaphy; placenta prævia; retention or detachment of the placenta; apoplexy of the placenta; cephalotripsy or embryotomy (adult female); symphysiotomy.

119 A. Puerperal septicemia. *This title includes:* Puerperal fever; puerperal infection.

This title does not include: Septicemia (without epithet) (14).

119 B. Puerperal phlebitis. *This title includes:* Puerperal lymphangitis.

120. Puerperal metropéritonitis. *This title includes:* Puerperal peritonitis.

121. Puerperal albuminuria and eclampsia. *This title includes:* Puerperal uremia; nephritis of pregnancy; eclampsia gravidarum; epileptiform convulsions of women in pregnancy; puerperal tetanus.

122. Puerperal phlegmasia alba dolens.

Frequent complications: Gangrene; embolism.

123. Other accidents of childbearing.—Sudden death. *This title includes:* Puerperal embolism; puerperal thrombosis; sudden death during the puerperium; death after labor (without other explanation).

This title does not include: Sudden death (non-puerperal) (157); puerperal scarlatina (6).

124. Puerperal diseases of the breast. *This title includes:* Fissure of the nipple (puerperal); abscess of the breast (puerperal); fistula of the breast (puerperal or unspecified).

IX. Diseases of the Skin and of the Cellular Tissue.

125. Erysipelas. *This title includes:* All erysipelas, either medical or surgical, and whatever its situation; gangrenous or phlegmonous erysipelas.

126. Gangrene. *This title includes:* Mortification; sphacelus; gangrene—dry, senile or of the extremities; gangrene of the mouth; gangrene of the vulva, etc.; noma; Raynaud's disease.

This title does not include: Gangrene of the lungs (75); hernial gangrene (86); gangrenous erysipelas (126).

127. Carbuncle. *This title includes:* Furuncle; Biskra's boil or button.

128. Phlegmon, acute abscess. *This title includes:* Abscess (without epithet); phlegmonous tumor; adeno-phlegmon; suppurative adenitis; bubo (without epithet); suppurating bubo; diffuse phlegmon; panaris; paronychia; mediastinal abscess; pus cavity (without other indication).

This title does not include: Bacillary abscess (22 D); abscess of the pharynx, throat or retropharyngeal abscess (79 A); abscess of the liver (92); abscess of the iliac fossa (95); pelvic abscess (107); abscess of the prostate (104); urinary abscess (103 B); periuterine abscess (107); non-puerperal abscess of the breast (115); puerperal abscess of the breast (124); cold abscess (131); symptomatic abscess (131); ossifluent abscess (131); angioleucitis (63).

129 [A. Soft chancre.] *This title includes:* Chancrelle; chancroid; simple chancre; phagedenic chancre; bubo from soft chancre; bubo from absorption, or venereal, virulent or phagedenic bubo.

This title does not include: Infectious or syphilitic chancre or bubo (24); chancre of the mouth (24); scrofulous bubo (23); suppurating bubo (128); bubo (without epithet) (128).

129 [B. *Tinea favosa*.]

129 [C. *Tinea tonsurans*, *trichophytosis*.] *This title includes:* Tinea (without epithet).

129 [D. *Pelada*.]

129 [E. *Psora*.]

129 [F.] *Other diseases of the skin and adnexa*. *This title includes:* Erythema; urticaria; prurigo; phthiriasis; lichen; pityriasis; psoriasis; dermatitis; eczema; impetigo; herpes; ecthyma; elephantiasis; pachydermia; polysarcia; keloid; mycosis fungoides; seborrhea; trophoneuroses; herpes zoster; Wardrop's disease.

This title does not include: Pachydermic cachexia (33).

X. Diseases of the Organs of Locomotion.

130. Pott's disease. *This title includes:* Caries of the vertebræ; spine disease; vertebral polyarthritis.

Frequent complications: Cold abscess; paraplegia; visceral tuberculosis.

131. Cold abscess; symptomatic abscess. *This title includes:* Ossifluent abscess.

132. Other diseases of the bones. *This title includes:* Periostitis; osteitis; osteo-periostitis; osteo-myelitis; caries; necrosis; sequestra; perforation of the palatine arch; necrosis of the maxillary bone (not from phosphorus or without indication); exostosis (without epithet); osteoma; bony tumor; tumor of the skull; foreign body in the frontal or other sinuses; mastoiditis; abscess of the frontal sinus, maxillary sinus, etc.; osteomalacia; softening of bones; rachitis; scoliosis; lordosis; kyphosis.

This title does not include: Caries of the petrous portion of the temporal bone (53); dental caries (78); osteoscopic pains (24); osteosarcoma (25 G); necrosis due to phosphorus (36).

133. White swellings. *This title includes:* Articular fungosity; coxalgia; scapulalgia.

134 [A. *Arthritis*.] *This title includes:* Polyarthritis (not of the vertebræ); arthropoyosis.

134 [B.] *Other diseases of the joints*. *This title includes:* Hydrarthrosis; foreign body in joint; arthrodynia; arthrophtosis; ankylosis; arthralgia; arthrocele; genu valgum.

This title does not include: Rheumatismal arthritis (26); arthritis (26).

135. Amputation. *This title includes:* Only cases in which the cause (of the amputation) is not indicated.

This title does not include: Amputation of the breast (115); amputation of the penis (106).

Frequent complications: Septicemia; erysipelas; tetanus hemorrhage.

136. Other diseases of the organs of locomotion. *This title includes:* Hygroma; perichondritis; disarticulation; tarsalgia; painful clubfoot; retracted digitis; Dupuytren's disease; nodular rheumatism; rupture of muscle; muscular diastasis; myodiastasis; rupture of tendon; diseases of tendons; tenophyte; tenosynovitis; tenotomy; tenorrhaphy; torticollis; lumbago.

XI. Malformations.

137. Malformations. *This title includes:* Malformation; monstrosity; anomaly; arrested development; hydrocephalus; megalcephalus; hydrorrhachis; spina bifida; anencephalus; encenphalocele; podencephalus; congenital eventration; omphalocele; exomphalus; ectopia; imperforate anus, etc.; harelip; anaspadias; hypospadias;

cryptorchidism; vascular nevus; polydactylism; syndactylism; clubfoot; talipes varus, valgus or equinus.

This title does not include: Persistent foramen ovale (57); coloboma (53); painful clubfoot (136).

XII. Infancy.

137, repeated. Newly-born, in maternities—no special disease.

138. Congenital debility, icterus and sclerema. *This title includes:* Premature birth; atrophy (infantile); icterus or hepatitis of the newly-born; atelectasis of the newly-born; edema of the newly-born.

139. Want of care.

140. Other diseases peculiar to infancy. *This title includes:* Umbilical hemorrhage.

XIII. Old Age.

141. Senile debility. *This title includes:* Senility; old age; cachexia (of the aged); senile exhaustion; senile dementia.

This title does not include: Senile gangrene (126).

XIV. Violence.

Note.—Among suicides should be classed only cases which are definitely stated as such, or which result from suicidal attempts.

External or internal lesions caused by sulphuric acid or other corrosive substances are not classed under *poisoning* but under *burns*.

142 A. Suicide by poison. *This title includes:* Voluntary poisoning.

This title does not include: Morphinism (37); cocaineism (37); wilful taking of sulphuric acid or any other corrosive acid (142 I).

142 B. Suicide by asphyxia. *This title includes:* Suicide by vapor of charcoal.

142 C. Suicide by strangulation. *This title includes:* Hanging.

142 D. Suicide by drowning.

142 E. Suicide by firearms.

142 F. Suicide by cutting instruments.

142 G. Suicide by precipitation from a height.

142 H. Suicide by crushing.

142 I. Other suicides. *This title includes:* Wilful taking of sulphuric acid or of any other very corrosive substance.

143. Fractures.

144 [A. Sprains.] *This title includes:* Sprain; distension of the ligaments.

144 [B.] Dislocations. *This title includes:* Luxation; subluxation.

145. Accidental injury. *This title includes:* Contusion; bite (not venomous or virulent); crushing; railroad accident (suicides excepted); injury by cutting instrument (without evidence of suicide); accidental fall; concussion of the brain; perforation of the skull; traumatic hemorrhage; traumatic fever; traumatic eventration; perforation of the abdomen or chest; every acute affection qualified as "traumatic"; wounds by firearms.

146 A. Burning by fire. *This title does not include:* Conflagration.

146 B. Burning by corrosive substances. *This title includes:* Burning by vitriol; accidental taking of sulphuric acid.

147. Sunstroke and freezing.

This title does not include: Cold (newly-born) (139).

148. Accidental drowning. *This title includes:* Drowning without evidence of suicide.

149 [A. Overwork.] *This title includes:* Fatigue.

149 [B.] Inanition. *This title includes:* Hunger; insufficient food (not including newly-born); want.

This title does not include: Want of care (newly-born) (139); insufficient nourishment (newly-born) (139); sitiophobia (46); hysteric anorexia (52 A).

150. Inhalation of noxious gases (not suicidal). *This title includes:* Accidental asphyxia (excluding pathological asphyxia and suicidal asphyxia); asphyxia by illuminating gas; asphyxia by stove (fixed or movable); oxide of carbon; conflagration; ammonium sulphhydrate; night-soil collectors' lead fumes; chloroform; nitrogen protoxide.

This title does not include: Asphyxia (without other indication) (156).

151. Other accidental poisoning. *This title includes:* Poisoning—criminal, accidental or by cause unknown; antimonial cholera; acute ergotism; absorption of venom; snake-bite.

This title does not include: Accidental taking of sulphuric acid or other corrosive substances (146 B); chronic lead poisoning (35); mercurial poisoning (36 or 37, as the case requires); morphinism, chronic ergotism, etc. (37).

152. Other external violence. *This title includes:* Accident (without other explanation); murder; homicide; assassination (without other explanation); ill-treatment (of an infant); execution; lightning; electricity; foreign body in the larynx; foreign body in the trachea.

XV. Ill-Defined Diseases.

Note.—The following titles comprise only diseases not well defined by the physician, either because his means of information were not sufficient, because the malady was not well characterized, or because the physician neglected to formulate a complete diagnosis.

153. Exhaustion and cachexia. *This title includes:* Debility (adults); asthenia; adynamia; ataxo-adynamia; asthenic, hectic, colliquative or synochal fever.

This title does not include: Congenital debility (139); exhaustion, cachexia or debility of the aged (141); ataxo-adynamic fever (1).

154 [A. Gastric disorder, anorexia.] *This title does not include:* Hysteric anorexia (52 A).

154 [B. Inflammatory] fever. *This title includes:* Algid fever; carphologia; fever of dentition; autumnal, gastric, bilious, or catarrhal fever.

This title does not include: Continued fever (1); brain fever (76); hay fever (76).

155. Dropsy. *This title includes:* Anasarca; ascites; edema of the extremities and general edema; organic disease (not defined). :

This title does not include: Edema of the newly-born (139); edema of the glottis (68); edema of the lungs (77 B); edema of the brain (42).

156. Asphyxia, cyanosis. *This title includes:* Dyspnea.

This title does not include: Asphyxia from external cause (suicide, 142 B); asphyxia from inhalation of noxious gases (150); cyanosis from persistent foramen ovale or malformation of the great vessels (57).

157. Sudden death. *This title includes:* Syncope (preceding death).

This title does not include: Sudden death during puerperium (123), unless the "sudden death" is unaccompanied by an explanatory remark, e. g., "sudden death due to diabetes" (24), or "sudden death from apoplexy" (42), etc.

158. Abdominal tumor. *This title includes:* Intestinal tumor; laparotomy.

This title does not include: Tumor of the stomach (25 B); tumor of the uterus (111); hydatid tumor (89); ovarian cyst (113).

159. Other tumors. *This title includes:* All tumors (except cancer and its synonyms) of which the location is not indicated by the physician; vascular tumor; cystotomy; lipoma; wen; sebaceous tumor.

This title does not include: Fecal tumor (86).

160. "Plaic." *This title includes:* Surgical shock.

161. Unknown diseases. *This title includes:* All of the returns of causes of death of too vague a character to permit them to be classed under any of the preceding titles: Coma; collapse; cough; delirium; suppuration; transfusion of blood; trepanning; tympanites; abdominal tympanites; polydipsia; polyuria; pollakiuria, etc., etc.

[**162. No disease.**] *This title includes:* Simulation.

**PLAN PROPOSED FOR AN INTERNATIONAL DECENNIAL RE-
VISION OF THE BERTILLON CLASSIFICATION OF
CAUSES OF DEATH.**

In view of the actual formal adoption of the Bertillon classification of causes of death by the American Public Health Association, the selection of a plan of international revision becomes at once a pressing practical necessity. Immediate action is necessary in the work of revision in order to accomplish the work in the time available. Much will be lost if the revised classification is not ready for use by 1900, so that the statistics of the next century may begin on a uniform basis. The work of revision should be thorough, and the wishes of all the countries and registration offices taking part in the same should be consulted. No absolutely fixed plan can be adopted at the present time, until opportunity shall be given for extended correspondence with the representatives of France and other countries taking part in the revision. Some general expression of the wishes of the Association, as representative of the three countries, Canada, Mexico and the United States, should be adopted, and working commissions should be appointed at once and engage immediately in the preliminary steps of the revision. Such commissions could report the detailed plan acceptable to the different countries at the next session of the Association for its formal sanction, but no time should be wasted in waiting for such action. In short, responsible commissions should be appointed with considerable discretionary power, exercised in accordance with the general wishes of the Association, and they should proceed to the immediate accomplishment of the necessary work, regularly reporting progress to the Association.

GENERAL PRINCIPLES.

1. A regular periodical revision is necessary for every classification of causes of death in order to keep it abreast of scientific advancement in the knowledge of diseases.
2. It is desirable that as many countries as possible signify their adhesion to this system and take part in its revision, which should be completed by 1900 in order that the international mortality statistics of the twentieth century be compiled on a uniform and strictly comparable basis.
3. All countries adopting this system and taking part in its revision should honorably conform their statistics to the resulting code of statistical procedure.
4. It is right that the wishes of countries making the largest practical use of this system should have the most weight in its revision. Therefore, as the registration of death is sometimes imperfect or may not extend over the entire extent of a country, the BASIS OF REPRESENTATION (voting weight) of a statistical office should depend upon the number of deaths registered, compiled and published by it in a year, and not upon the population represented.
5. Suggestions for changes are desirable from all demographers, clinicians, pathologists, statisticians, sanitarians, and, in general, from all persons making use of mortality statistics. The decision as to the advisability of proposed changes should remain with the registration offices practically engaged in the preparation of mortality reports.
6. Continuity is very important in statistics, for which reason no change should be made unless imperatively demanded. Therefore, for the sake of greater conservatism, it would seem advisable that no change be made from the methods now in use unless demanded by at least two-thirds of all the ballots cast.

7. While no changes or modifications should be introduced into the mortality tables during the period between the periodical revisions, the Commissions charged with the work of revision should remain in office until their successors are appointed for the next revision, so that any new questions of classification, or disputed points of classification arising in the meantime, may be referred to them for decision.

8. This revision is purely a statistical matter, and will be best conducted by purely statistical methods.

PLAN OF PROCEDURE.

Article 1.—Each country shall have a National Commission of three members representing the central statistical office for the registration of deaths, if any. For Canada, Mexico and the United States, these commissions shall be appointed by the President of the American Public Health Association, with the approval of the Executive Committee. These commissions shall be first appointed during the year 1898, and new commissions shall be appointed every ten years thereafter, each commission serving until the appointment of its successor.

Article 2.—Each National Commission shall elect one of its number as secretary, and shall issue to all of the registration offices in its jurisdiction a statement of the purpose of this system of international revision, a copy of the Bertillon system of classification as now in use, and request that any desired changes be suggested on blanks of the form provided, and sent to the National Secretary on or before June 30, 1899.

Article 3.—The Secretary of each National Commission shall tabulate all of the suggestions received by him from his jurisdiction on or before June 30, 1899, showing: (1) The tabular number of the list affected; (2) the proposed change; (3) the reasons alleged for same; (4) who proposed such change; (5) the individual or joint opinions of the members of the National Commission as to the expediency of such change. This tabulated report the Secretary of each National Commission shall dispatch on or before September 30, 1899, to the Secretary of every other National Commission.

Article 4.—The Secretary of each National Commission, upon receipt of the proposed changes from the Secretaries of all of the other National Commissions, shall add their reports to his own, with the addition of such opinions of the members of the National Commission as may be given on any particular question, and shall submit the whole to all of the constituent registration offices in his country for ballot on or before December 31, 1899.

Article 5.—The constituent registration offices are: (1) The National office, if a country has one central office, as in England, handling the statistics of the entire country; (2) The State or Provincial offices in countries having no National system of mortality registration, as in Canada and the United States; (3) City registration bureaus where there is neither National or State registration of deaths. The right to vote should proceed in the above order, to avoid duplication, a city being represented only when it is not included in a State system, and a State when it is not included in a National system.

Article 6.—Each constituent registration office shall cast one (1) vote for every thousand deaths registered, compiled and published in its last published annual Registration Report. Fractional thousands shall not be counted. Each office shall mark "Yes" or "No" opposite each question submitted by the National Secretary, and shall return the ballots to him on or before March 31, 1900. If "Yes" or "No" is not marked opposite any question, the office shall be understood as not voting thereon. A copy of the last published registration report of each office must accompany the ballot when transmitted to the National Secretary.

Article 7.—Census offices collecting mortality statistics shall be admitted to a vote for such portions of a country only as are not covered by State or municipal regis-

tration offices, and their basis of representation shall be 10 per cent if decennial, or 20 per cent if quinquennial, of the total deaths recorded for such non-registration area.

Article 8.—Each National Secretary shall tabulate the ballots received from his country, which work shall be examined and certified to by the other members of the National Commission, and present the same at a joint session (International Commission) of all of the National Commissions, to be held at Paris at the time of the International Congress of Hygiene and Demography in the year 1900.

Article 9.—The International Commission shall proceed to elect a Secretary, who shall combine and tabulate the ballots of all of the countries on each proposed change, and, after submission to each National Secretary for final review, shall announce the result of the international ballot.

Article 10.—Two-thirds of all votes cast shall be necessary to make a change. All changes made shall be announced by the International Secretary, through the several National Secretaries, as early in the year 1900 as possible, so that the revised classification may go into effect in the year 1901.

Article 11.—The standard classification to be referred to in all proposed amendments is that of the city of Paris for the year 1894, or the authorized translation issued in the language of each country by its National Commission. After the production of a revised complete classification, the several National Commissions shall be authorized, through the International Secretary, who shall consult all of the National Commissions, to recommend various consolidated or shorter forms for use in municipal statistics and for other purposes; also to settle new points of classification or inclusion of terms not determined by the Revision, such decisions to be operative until the points in question can come up at the next decennial revision.

Note.—The classification of Paris for the year 1894 was recommended as the basis prior to the appearance of the last edition of the Nomenclature, forming part of the annual report for 1896, and published as a separate pamphlet in 1898. The latter, which is translated in the preceding pages, should evidently be taken as the standard of reference at present

PROGRESS OF THE BERTILLON CLASSIFICATION.

At the date of the passage of this last leaf through the press, the First International Decennial Revision of the Bertillon Classification has been happily concluded at Paris August, 1900, with twenty-six nations actively represented in the International Commission, assembled under the auspices of the International Congress of Hygiene and Demography, participating therein, besides others cordially assenting to the movement but not formally represented by delegates. The official announcement of the completion of the revision and also of the formation of an International Bureau for the collation of statistics prepared according to this system in different countries, is as follows:

PARIS, October 1, 1900.

SIR—The French government invited the different other governments to send official delegates to represent them in the work of drawing up an international nomenclature of the causes of death, which renders the nosological statistics of the different countries comparable, one with another.

This International Commission met at Paris in August, 1900. It was composed of official delegates from twenty-six countries.

I have the honor to send you the minutes and text of the work of the convention, which were signed at the end of its seventh session (August 21, 1900).

I also send a pamphlet in which is given a résumé of the work of the convention and which contains also a "Dictionary of Diseases," designed to facilitate the application of its decisions: tables indicating how deaths, attributed simultaneously to two different causes, should be classified, the list of countries which, from the present, use the new nomenclature, etc.

The International Commission saw fit to delegate me to receive the statistics elaborated in conformity with the nomenclatures adopted (and, if possible, to publish them in comparative tables); to collect the observations and criticisms which its work may elicit, and, when needed, to bring about the reforms of details which may be recognized as indispensable.

I will therefore be thankful if you will kindly examine these nomenclatures, communicate to me the observations which they may suggest to you, and, if possible, will join with the delegates of the twenty-five states who have engaged to recommend their adoption to their respective governments. You will thus contribute to the realization of a progress which all those who are occupied with statistics have for half a century been unanimous in desiring.

Please accept the assurance of my sentiments of most distinguished consideration.

DR. JACQUES BERTILLON.

*General Secretary of the International Commission,
Chief of Statistics of the City of Paris.*

It is extremely gratifying to realize the degree of unanimity in this important matter. While nomenclature is of fundamental importance, as affecting the elementary facts of statistics, once this difficulty of lack of uniformity is successfully cleared away, demographers can proceed to the consideration of other important questions which have long been waiting concerted action. The agreement upon a uniform classification will pave the way to many reforms of a similar character, which may well be instituted by means of the International Bureau now organized.

In this connection, the following announcement, published in the special supplement to the issue of the *Michigan Monthly Bulletin of Vital Statistics* for October, 1900, will show the wide acceptance of the system prior to the date at which its official adoption is desired. No other classification has ever been so universally received, and at no time in the past has the prospect of thoroughly comparable international statistics been so completely realized as it will be at the beginning of the twentieth century (January 1, 1901), the date set for the revised classification to go into use.

THE BERTILLON CLASSIFICATION OF CAUSES OF DEATH.

A modern, uniform classification of mortality and morbidity statistics recommended for general adoption on JANUARY 1, 1901, by the following international organizations:

INTERNATIONAL CONGRESS OF HYGIENE AND DEMOGRAPHY. INTERNATIONAL STATISTICAL INSTITUTE, AMERICAN PUBLIC HEALTH ASSOCIATION, AND INTERNATIONAL CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

FIRST INTERNATIONAL DECENNIAL REVISION, PARIS. 1900.

ARGENTINE REPUBLIC,
AUSTRIA,
BELGIUM,
BOLIVIA,
CANADA,
CHILE,
COLOMBIA,
COSTA RICA,
DENMARK,
ECUADOR,

FRANCE,
GERMANY,
GREECE,
HOLLAND,
HONDURAS,
HUNGARY,
ITALY,
MEXICO,
MONACO,
NORWAY,

PERU,
PORTUGAL,
RUSSIA,
SALVADOR,
SPAIN,
SWEDEN,
SWITZERLAND,
UNITED STATES,
URUGUAY,
ETC., ETC.

This International Revision, which represents the greatest degree of unanimity ever recorded among demographers, has been largely brought about by AMERICAN REGISTRARS, as represented in the national sanitary associations. All of the registration States (but one) and most of the leading cities have accepted this system, as shown by the partial list below. Join with us for the sake of national and international unity and comparability.

MAINE,
NEW HAMPSHIRE,
VERMONT,
MASSACHUSETTS,
RHODE ISLAND,
CONNECTICUT,
NEW JERSEY,
PENNSYLVANIA,
DELAWARE,

MARYLAND,
DISTRICT OF COLUMBIA,
MICHIGAN,
INDIANA,
IOWA,
MINNESOTA,
WISCONSIN,
COLORADO,
ETC., ETC.

GREATER NEW YORK,
BOSTON,
BUFFALO,
BALTIMORE,
SAVANNAH,
COLUMBUS,
MILWAUKEE,
DUBUQUE,
TOLEDO,
WASHINGTON,
CHARLESTON,
ETC., ETC.

RECOMMENDED BY THE UNITED STATES CENSUS.

In a letter just received from Hon. William A. King, Chief Statistician for Vital Statistics of the Twelfth United States Census, he cordially indorses the Bertillon classification, as follows:

"If my opinion should be requested by any official contemplating a change in the local classification used, I would most earnestly urge the adoption of the Bertillon system as tending to a more precise (and uniform) statement of facts, concerning individual cases with which this office has to deal."

POSTSCRIPT—An English translation of the revised version of the Bertillon classification is now being prepared and will shortly be published by the U. S. Marine Hospital Service. Address Dr. Walter Wyman, Supervising Surgeon General, U. S. M. H. S., Washington, D. C., for a copy of same.

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